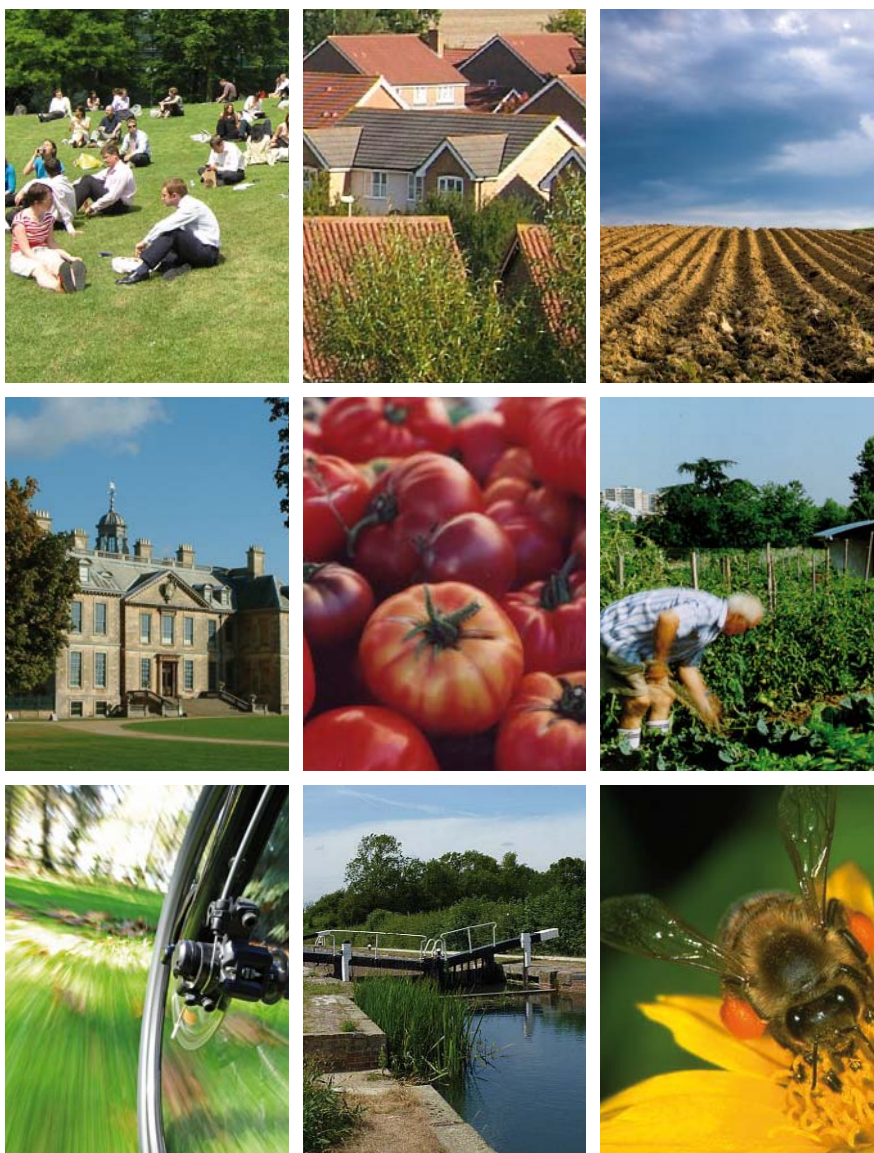


South Kesteven District Council

**Grantham
Green Infrastructure Strategy**





South Kesteven District Council

**Grantham
Green Infrastructure Strategy**

Approved


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Position

Director

Date

9 March 2011

Revision

FINAL

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PREFACE

South Kesteven District Council (SKDC) has commissioned independent environmental planning consultants Chris Blandford Associates (CBA) to produce a Green Infrastructure Strategy for Grantham, which will provide a key part of the evidence base for the Grantham Area Action Plan and Sustainable Urban Extension masterplans.

This document is the Green Infrastructure Strategy, which was informed by stakeholder consultation.

The Strategy sets out CBA's preliminary recommendations on priorities for green infrastructure delivery to support the growth of Grantham over the next 15 years. It is not a statement of Council policy. Please note that while every reasonable effort has been made to source relevant and up-to-date digital data to inform the Strategy, the information included in the report may not be exhaustive.

ACKNOWLEDGEMENTS

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We would also like to offer our thanks to all those individuals and organisations who contributed data and other information for the study, and/or provided inputs through the stakeholder consultation.

The CBA Team comprised:

- Dominic Watkins (Project Director)
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EXECUTIVE SUMMARY

Background

In September 2010, South Kesteven District Council (SKDC) commissioned independent environmental planning consultants Chris Blandford Associates (CBA) to produce a Green Infrastructure Strategy for Grantham, which will provide a key part of the evidence base for the Grantham Area Action Plan and Sustainable Urban Extension masterplans. The Strategy sets out CBA's recommendations on the priorities for Green Infrastructure (GI) provision to support the growth of Grantham over the next 15 years.

'Green infrastructure' is the network of green spaces and links that supports natural processes, and delivers ecosystem services and benefits integral to the health and quality of life for Grantham's communities. This includes, for example, flood attenuation and water resource management, countering the heat island effect of urban areas, and providing opportunities for access to nature and food production. Green infrastructure networks include a range of different green space types: parks, gardens and recreation grounds; amenity green spaces; natural green spaces; green corridors and access routes; and other open spaces, such as allotments and churchyards.

Grantham's green infrastructure network comprises both green spaces within urban areas, such as Wyndham Park, and larger spaces in the countryside around the town, such as Belton Park. It also includes green corridors, such as the River Witham and the Grantham Canal that are significant assets within the town's green infrastructure network.

Green infrastructure is a holistic approach to planning and managing the natural environment that acknowledges the multiple benefits and vital functions it provides for the economy, wildlife, local people, communities and cultural assets alike. Provision of new and enhance green infrastructure is therefore an essential part of planning for Grantham's future.

Purpose of the Strategy

The Strategy aims to provide a strategic framework and vision for the planning, implementation and management of a multi-functional green infrastructure network of green spaces and links, connecting the town and the surrounding countryside. It also seeks to provide an up-to-date evidence base of the range of existing environmental and cultural assets in the plan area, and identify opportunities for addressing deficiencies in green spaces and links. The Strategy sets out the consultant's independent recommendations on priorities for green infrastructure delivery to support the growth of Grantham over the next 15 years. It is not a statement of Council policy.

Baseline Evidence

The Strategy is based on a wide ranging audit of the environmental and cultural assets, and social-economic influences, that are considered to be a key influence in defining the network of green spaces and links for Grantham. In addition to consideration of site-specific green infrastructure assets, needs and opportunities, the Strategy gives particular attention to the long-term protection, enhancement and management of the River Witham and Grantham Canal corridors, and includes an analysis of the environmental sensitivity of the North West Quadrant and Southern Quadrant sites. It is intended that the data, maps and analysis will form a valuable evidence base for informing the Grantham Area Action Plan and Sustainable Urban Extension masterplans.

Stakeholder Consultation

A stakeholder workshop was held in November 2010 to provide an opportunity for a range of local stakeholders to review the interim green infrastructure audit findings, and to identify and discuss needs and opportunities for green infrastructure provision in the Study Area. Stakeholders were also consulted on the draft Green Infrastructure Strategy prior to its finalisation.

The Proposed Green Infrastructure Strategy

The strategic aims of the Green Infrastructure Strategy for Grantham are to:

- Inspire businesses and decision makers to support investment in green infrastructure by recognising its vital role in improving the lives, livelihoods and health of local communities in Grantham.
- Promote deeper understanding of the economic, environmental and social benefits of green infrastructure, including the provision of ecosystem services that are essential for human well-being.
- Provide a co-ordinated, strategic approach to delivery and management of a multi-functional, high quality Green Infrastructure Network that reflects local needs.

The Green Infrastructure Strategy proposes that delivery of a multi-functional, high quality Green Infrastructure Network for Grantham will best be achieved by the various different organisations and stakeholders adopting a common approach. In this context, the following overarching principles have been developed to provide a foundation for guiding decision-making in relation to future green infrastructure provision in and around Grantham:

1. **Safeguard** the integrity of the green infrastructure network through protection, enhancement, creation and management of high quality green spaces, and provide a net increase in biodiversity.
2. **Strengthen** the multi-functionality and connectivity of the existing green infrastructure network by creating new green spaces/links that connect the town centre, urban fringe and wider countryside.
3. **Secure** resources to ensure sustainable and long-term management/maintenance of high quality green spaces in order to continue delivering benefits for future generations.
4. **Celebrate** successful green infrastructure projects and ensure that good practice is widely disseminated and promoted.
5. **Adapt** to and mitigate against the effects of climate change through innovative green infrastructure design solutions, including sustainable water management and urban cooling measures.
6. **Retrofit** green infrastructure into established built environments within Grantham and the surrounding villages.
7. **Embed** green infrastructure into the design and layout of new developments/growth areas alongside the masterplanning of the built environment and grey infrastructure.
8. **Sustain** the local character of Grantham by managing townscape and landscape change to protect and enhance sensitive features, including cultural heritage assets.
9. **Reverse** the decline in biodiversity through investment in ecological networks of new and enhanced habitats to reduce fragmentation and increase potential for species dispersal.
10. **Deliver** lasting benefits for local people in terms of social inclusion, community development and lifelong learning.

The Green Infrastructure Network

The Strategy sets out a proposed Green Infrastructure Network for Grantham, which provides a strategic framework for guiding investment in green infrastructure implementation and delivery.

Investment in a connected and multi-functional network of high quality green spaces and links in and around Grantham is necessary to support sustainable development objectives. The proposed Green Infrastructure Network for Grantham (see **Figure 5.1**) encompasses a hierarchy of green spaces and links, in terms of location, function, size and levels of accessibility/use, and operates at every spatial scale and all geographic areas within Grantham, the surrounding villages and countryside.

The spatial representation of the overall Green Infrastructure Network is illustrated through corridors and linkages, which together provide a 'bigger picture' for the delivery of green infrastructure. It is intended to help focus attention or priority on land that needs to be safeguarded, managed or secured in positive ways to create a multi-functional network of green spaces and links for which investment can deliver the greatest range of benefits. It is not a rigid approach. The Green Infrastructure Network is intended to be flexible and responsive to opportunities - such as changing land ownership, community aspirations, access to funding, development opportunities, policy considerations, etc - that may change priorities for investment over time.

The green infrastructure concept applies across the whole of the area, and it can operate at any scale. However, the proposed Green Infrastructure Network identifies locations where targeting investment in green infrastructure is most likely to deliver multiple benefits across a range of key environmental, social and economic policy areas. The main considerations in steering investment priorities are:

- To focus investment on green infrastructure provision and management to address current deficits of provision/needs;
- To meet the green infrastructure needs of communities in and around the town who are likely to experience major growth-related pressures in the period to 2026; and
- To protect, enhance and manage existing valuable green infrastructure assets that are under current or future pressure, in particular accessible natural greenspaces, biodiversity sites, heritage features and watercourses.

The proposed Green Infrastructure Network encapsulates a range of green spaces and linkages within a varied townscape and landscape setting. With investment over time, the Green Infrastructure Network will offer more diverse uses, experiences and functions to deliver increased economic, environmental and social benefits for the Grantham area.

At the heart of the Green Infrastructure Network is the **Urban Green Grid**. This comprises a matrix of green spaces and access links threading through the established built environment and the planned urban extensions, weaving together the areas where people live and work with public transport networks and the wider countryside. The Urban Green Grid provides urban communities with green areas for recreation and wildlife, a sense of place, education opportunities, and helps to contribute to sustainable travel by providing safe routes for walking and cycling. The Urban Green Grid encompasses three spatial components:

- Grantham Urban Green Grid (the established built environment);
- North West Quadrant Growth Area Green Grid (planned urban extension); and
- Southern Quadrant Growth Area Green Grid (planned urban extension).

A network of broad **Green Corridors** in and around the town provides the backbone of the overall Green Infrastructure Network. They are broadly defined corridors comprising a mosaic of land uses, natural, built heritage and archaeological resources and settlements, and are intended to become fully multi-functional zones with the ability or potential to deliver a range of economic, environmental and social benefits related to the seven green infrastructure functions. These corridors are significant green infrastructure assets for the town, and also provide key strategic linkages with green infrastructure networks at the District and Sub-regional level. Three Green Corridors are proposed:

- River Witham Green Corridor – a north-south ‘green spine’ for the town linking with Belton Park to the north and the Southern Quadrant growth area;
- Grantham Canal Green Corridor – a multi-functional corridor linking the town centre to countryside destinations in the west, extending into Leicestershire and Nottinghamshire; and
- Grantham Green Loop – a broad corridor of interlinked and multi-functional green spaces in the countryside surrounding the town, providing connectivity with the town centre, public transport nodes and employment/residential areas (including the growth areas).

Within and connecting the Urban Green Grid and Green Corridors, a network of **Green Links** will provide safe and direct multi-use off-road routes for pedestrians and cycle users, linking and integrating residential and business communities across the area to key services, leisure destinations and green spaces. The proposed Green Links are:

- River Witham (North) Green Link – linking the town centre to Belton Park;
- Londonthorpe Green Link – linking the town centre via the River Witham to Londonthorpe Wood and the village of Londonthorpe;
- East Grantham Green Link – linking the town centre to the countryside east of Grantham and the village of Old Somerby;
- River Witham (South) Green Link – linking the town centre to the Southern Quadrant Growth Area and the village of Little Ponton;

- Grantham Canal Green Link – linking the town centre to the villages of Harlaxton, Denton and Woolsthorpe;
- Barrowby Green Link – linking the town centre via the North West Quadrant Growth Area to the villages of Barrowby, Sedgebrook and Allington; and
- Great Gonerby Green Link – linking the town centre via the North West Quadrant Growth Area to the village of Great Gonerby.

With investment, the Green Links have the potential to link with public transport services to provide an integrated sustainable movement network for Grantham that will help reduce reliance on car-use. The Green Links reflect the priority for achieving a connected network of green spaces between the town and the surrounding countryside. While the Green Links have the primary function of providing access and recreational route linkages, they also offer opportunities for biodiversity enhancement.

It will be important to ensure that the integrity of the overall Green Infrastructure Network is not compromised by inappropriate development and land management. This means that there needs to be flexibility in how the Green Infrastructure Network is protected and managed. In cases where there is an unavoidable need to trade off existing green infrastructure assets to meet social and economic needs, this should be offset by mitigation and compensation measures to enhance the functionality of other green infrastructure assets elsewhere within the Green Infrastructure Network. However, some habitats, such as ancient woodlands, are irreplaceable and need protection. Where development is planned within or in close proximity to a green infrastructure corridor, it should become an integral feature to the design and ‘identity’ of the development site to ensure that the connectivity of the network for both public benefit and biodiversity is retained and enhanced.

While the proposed Green Infrastructure Network focuses particular attention on strategic priorities within the defined zones, investment in green infrastructure provision within the wider study area that may have potential to deliver benefits should also be considered where appropriate. In these areas, targeted environmental and access improvements are envisaged to strengthen the Green Infrastructure Network. These improvements would complement and support the priority areas for investment within the Green Infrastructure Network by focusing environmental land management schemes on addressing identified needs and opportunities for increasing the multi-functionality of the countryside.

Implementation Strategy

To assist in guiding the delivery of the proposed Strategy, an Implementation Strategy is proposed. It identifies delivery mechanisms and potential funding sources, and suggests a range of green infrastructure projects supported by an ‘outline’ action plan to guide project delivery. The action plan includes an estimate of indicative costs required to take forward the delivery of the green infrastructure projects.

A concerted effort over a long period is necessary to ensure that green infrastructure is planned, delivered and managed to fully meet the needs of existing and new communities; protect and enhance the environment (including biodiversity, landscape and heritage); address the challenges of climate change; and underpin the economic stability and growth of the town. Priorities for successful planning, delivery and management of green infrastructure include:

- Championing the importance, benefits and principles of green infrastructure to a wide audience – including the public, private and voluntary sectors;
- Influencing and enabling delivery of green infrastructure;
- Marketing and advocacy to promote green infrastructure;
- Identification and selection of green infrastructure projects for funding;
- Establishing partnerships for the funding, delivery, management and ownership of specific green infrastructure projects;
- Identifying and disseminating information on best practice approaches to green infrastructure delivery; and
- Liaising with neighbouring areas to co-ordinate cross-boundary delivery of projects at the sub-regional scale.

Reflecting the multi-dimensional nature of green infrastructure, and the potential for multiple social, economic and environmental benefits, the Strategy identifies a range of funding streams for securing the implementation of green infrastructure. Funding for delivery of green infrastructure related to individual developments may be secured from developer contributions. However, it should be noted that over-reliance on developer contributions may not result in the anticipated funding in the current economic climate. In these circumstances, a creative approach to the use of public and private sector grants and funding should also be adopted. The Green Infrastructure Strategy aims to encourage high quality greenspace management and maintenance standards, and investment in new or improved green infrastructure should be supported by a long-term commitment to its maintenance.

Green Infrastructure Projects

The Strategy recommends that priority is given to delivering projects for enhancing, extending and connecting the existing network of green spaces within the Strategic Green Infrastructure Investment Zones identified on the proposed Green Infrastructure Network for Grantham (see **Figure 5.1**). These are the broad locations where targeting investment in green infrastructure is considered to deliver multiple benefits for Grantham across a range of key environmental, social and economic priority policy areas.

Based on the analysis of needs and opportunities for enhanced provision of particular elements of green infrastructure, a range of green space and linkage projects are suggested as a starting point to support the sustainable regeneration and growth of Grantham over the next 15 years. These projects seek to maximise the multifunctional nature of the Green Infrastructure Network as a whole. They are designed to provide, in combination, a mosaic of primary and complementary secondary functions that would deliver the greatest green infrastructure benefits for Grantham. These include for example:

- Projects to improve the quality of Grantham's urban environment and increase connectivity between key areas and facilities within the town – such as the Heritage and Environment Trail, The Green Mile and Greater Wyndham Park projects.
- Projects to embed green infrastructure into the Sustainable Urban Extensions and link the sites to the wider network of green spaces – including a project to provide a new community park for the Southern Quadrant Growth Area based on the River Witham.
- Projects such as the Witham Riverpark, which promotes a strategic and long term approach to management of the river corridor as a key green infrastructure asset for the town.
- Projects to create community parklands within the countryside around the northwest and east of the town to provide new areas of accessible green spaces close to existing and future communities.
- Projects to improve connectivity between the town's existing communities, new communities in the Growth Areas and the surrounding rural communities - such as creation of new 'Greenways' to provide multi-user, off-road pedestrian and cycle leisure and commuting routes.

Development Guidelines

The planning and development management process affords considerable potential to promote and deliver green infrastructure. The Strategy provides guidelines for embedding green infrastructure into new development schemes, including standards for the quantity, quality and accessibility of green space provision. These guidelines are intended to be of value for developers, residents and planners in helping inform pre-application discussions and consultations, evaluation of planning applications and implementation of developments.

1.0 INTRODUCTION

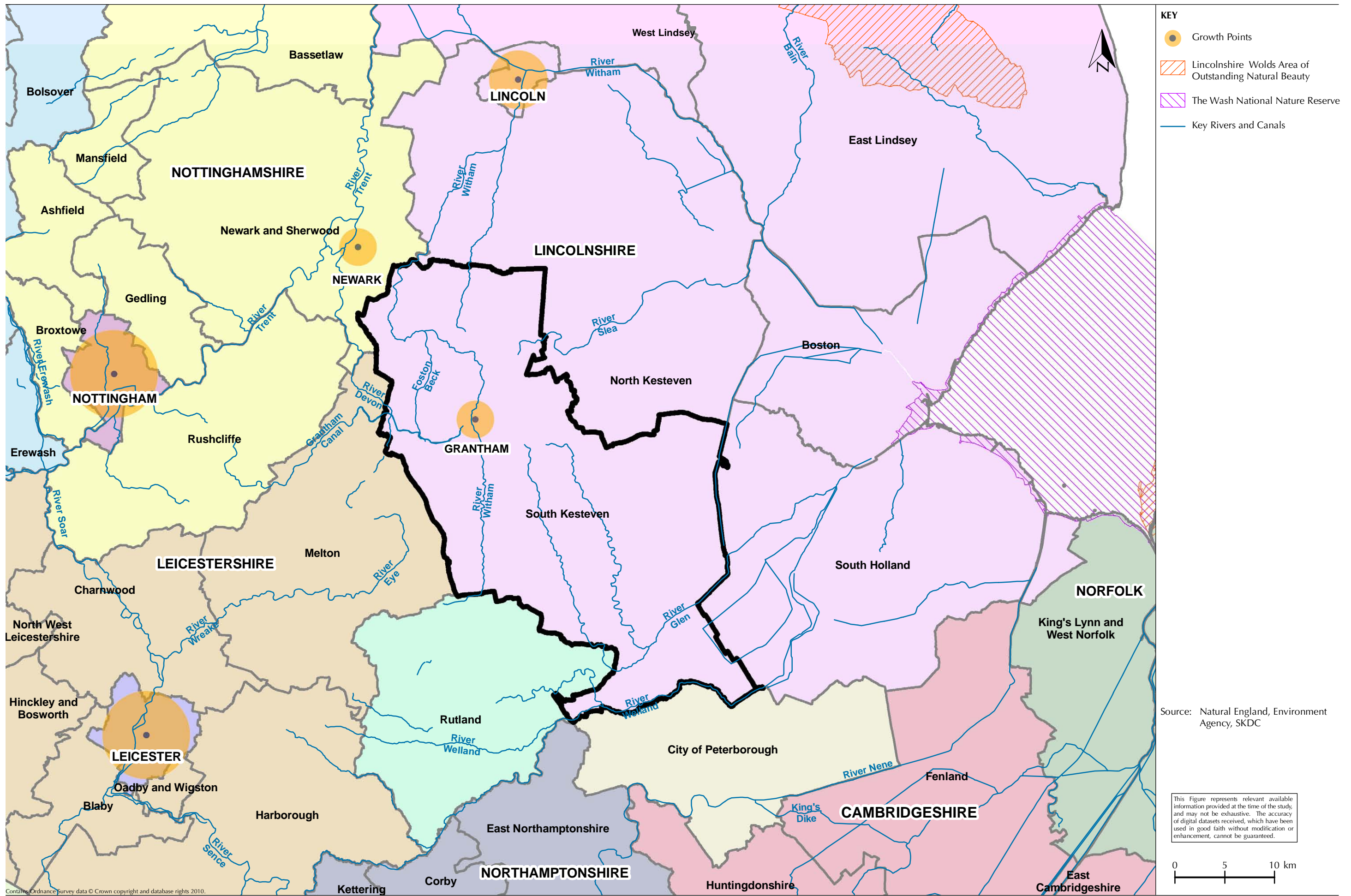
1.1 Background and Context

Origins and Challenges

- 1.1.1 Grantham is located within South Kesteven District in the county of Lincolnshire, around 26 miles south of Lincoln and 24 miles east of Nottingham (see **Figure 1.1**). The town was founded by the Anglo-Saxons during the 6th and 7th centuries. By the middle of the 11th century, Grantham had become an important market town at the centre of a region of Saxon and Danish villages, with its prosperity based on the production and sale of wool and the leather trade. Today, Grantham is the largest settlement within the District with an estimated population of around 45,000.
- 1.1.2 As a designated Growth Point, Grantham has committed to achieving increased delivery of housing numbers and providing employment opportunities for all residents, which presents challenges as there will be significant infrastructure requirements arising from the proposed developments. As the population grows, so will pressures on the town's existing 'green' infrastructure, highlighting the need for provision of new and enhanced green spaces and other environmental assets in line with growth proposals.

Grantham Area Action Plan

- 1.1.3 South Kesteven District Council (SKDC) is producing an Area Action Plan for Grantham. This plan will drive regeneration and growth for the town and will serve as a vehicle to deliver Grantham's status as a Growth Point. It will set out the Council's vision for the town together with objectives, policy framework and proposals to guide future development over the next 15 years up to 2026. The Grantham Area Action Plan will identify and allocate sites for specific types of development including employment, retail, housing, open space and green infrastructure networks, and will play a key role in delivering future development requirement for the town. It is currently proposed that the Area Action Plan will also make provision for Grantham's growth to be concentrated in two principal growth areas known as the Northwest Quadrant and the Southern Quadrant.
- 1.1.4 In September 2010, SKDC commissioned independent environmental planning consultants Chris Blandford Associates (CBA) to produce a Green Infrastructure Strategy for Grantham, which will provide a key part of the evidence base for the Grantham Area Action Plan and Sustainable Urban Extension masterplans.



GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 1.1
Strategic Context

- 1.1.5 This document sets out CBA's recommendations on the priorities for Green Infrastructure (GI) provision to support the growth of Grantham over the next 15 years.

National Policy Drivers

- 1.1.6 The current national planning policy framework for the natural environment, countryside and landscape is set out in PPS 1¹, PPS 7² and PPS 9³. The policies are aimed at sustainable development which protects the countryside, protects and enhances biodiversity, and provides for access to the countryside.
- 1.1.7 The draft PPS on Planning for a Natural and Healthy Environment⁴ encourages local planning authorities to adopt a strategic approach to planning for green infrastructure alongside open space, sports and recreation facilities provision. It also identifies development management policy principles relating to the maintenance of an adequate supply of green infrastructure for meeting identified environmental, social and economic needs.
- 1.1.8 PPS 12⁵ calls for local development plans to be underpinned by evidence of what green infrastructure is needed to support the proposed amount, type and distribution of development for an area.

1.2 What is Green Infrastructure?

- 1.2.1 'Green infrastructure' is the network of green spaces and links that supports natural processes, and delivers ecosystem services and benefits integral to the health and quality of life for Grantham's communities. This includes, for example, flood attenuation and water resource management, countering the heat island effect of urban areas, and providing opportunities for access to nature and food production. Green infrastructure networks include a range of different green space types: parks, gardens and recreation grounds; amenity green spaces; natural green spaces; green corridors and access routes; and other open spaces, such as allotments and churchyards. Grantham's green infrastructure network comprises both green spaces within urban areas, such as Wyndham Park, and larger spaces in the countryside around the town, such as Belton Park. It also includes green corridors, such as the River Witham and the Grantham Canal that are significant assets within the town's green infrastructure network.

¹ Planning Policy Statement 1 - Delivering Sustainable Development (2005) and PPS1 Supplement - Planning and Climate Change (2007).

² Planning Policy Statement 7 - Sustainable Development in Rural Areas (CLG, 2004).

³ Planning Policy Statement 9 - Biodiversity and Geological Conservation (CLG, 2005)

⁴ Consultation Draft PPS on Planning for a Natural and Healthy Environment (CLG, March 2010)

⁵ Planning Policy Statement 12 – Creating Strong and Prosperous Communities through Local Spatial Planning (CLG, 2008).

1.2.2 Green infrastructure is thus a holistic approach to planning and managing the natural environment that acknowledges the multiple benefits and vital functions it provides for the economy, wildlife, local people, communities and cultural assets alike.⁶ Provision of new and enhanced green infrastructure is therefore an essential part of planning for Grantham's future.

1.2.3 Further details about the concepts underpinning the green infrastructure approach can be found in **Section 4.2**.

Green Infrastructure Typology

1.2.4 It is important to consider green infrastructure holistically, and at a landscape scale as well as at the scale of individual sites. The typology of green infrastructure assets developed for the purposes of this Strategy includes the following public and private assets, with and without public access, in urban and rural locations:

- **Parks, gardens and recreation grounds** – including urban parks, recreation grounds, and formal gardens and country estates (of national and local interest);
- **Amenity green space** – including informal recreation spaces, communal green spaces within housing areas, children's play areas, playing fields, domestic gardens, village greens, urban commons, other incidental space, and green roofs;
- **Natural and semi-natural green spaces** – including woodland and scrub, grassland, meadows, open water bodies, and running water;
- **Green corridors** – including rivers and canals (and their banks), road and rail corridors/verges, hedgerows, ditches, cycling routes, pedestrian paths, and rights of way; and
- **Other green spaces** – allotments, community gardens, cemeteries and churchyards, outdoor sports spaces, heritage sites, development sites with potential for open space and links, land in agri-environmental management.

1.2.5 This typology is generally reflected in the mapping of green infrastructure assets within **Section 2.0**.

Green Infrastructure and Open Space Planning

1.2.6 In accordance with the requirements of PPG17⁷, the Council commissioned an Open Space, Sport and Recreation Study which identifies the type, quality and quantity of a range of open space sites in the district and Grantham, and proposes minimum standards.

⁶ Green Infrastructure Guide for the East Midlands (2008)

⁷ PPG17 Planning for Open Space, Sport and Recreation, 2002.

- 1.2.7 As recommended by the Natural England Green Infrastructure Guidance (2009), it is important to make a distinction between planning for green infrastructure (as reflected in this Green Infrastructure Strategy) and planning for open space, sport and recreation facilities (as reflected in the requirements of PPG17). Green infrastructure planning goes beyond the site specific, considering also the 'big picture' – landscape context, hinterland and setting, as well as strategic links of sub-regional scale and beyond. Green infrastructure also provides a multifunctional, connected network delivering ecosystem services. Whilst PPG17 compliant studies consider typologies beyond sports and amenity space, green spaces are considered primarily from access, quality and management perspectives, rather than consideration of wider environmental benefits and services. These green spaces are, however, important constituents of a green infrastructure network.
- 1.2.8 In line with this approach, the Green Infrastructure Strategy seeks to address the gaps and deficiencies in provision identified in Grantham by the South Kesteven Open Space, Sport and Recreation Study as part of the proposed green infrastructure network of green spaces (**Section 5.0**) and green infrastructure projects (**Section 6.0**). The Strategy also reflects the minimum standards for provision of open space, sport and recreational facilities recommended by the PPG17 Study for the planning and design of new communities.

1.3 Purpose and Objectives

- 1.3.1 The district-wide Green Infrastructure Strategy⁸ commissioned by the Council provides a strategic framework for green infrastructure planning in the Grantham Area, and identifies opportunities to plug strategic deficiencies in accessible green spaces in around the town.
- 1.3.2 The Grantham Green Infrastructure Strategy is intended to provide a key part of the evidence base for the Grantham Area Action Plan and Sustainable Urban Extension masterplans, by identifying priorities for green infrastructure provision to support the sustainable growth of Grantham over the next 15 years up to 2026.
- 1.3.3 The Strategy aims to provide a strategic framework and vision for the planning, implementation and management of a multi-functional green infrastructure network of green spaces and links, connecting the town and the surrounding countryside. It also seeks to provide an up-to-date evidence base of the range of existing environmental and cultural assets in the plan area, and identify opportunities for addressing deficiencies in green spaces and links, including those identified by the district-wide study.

⁸ South Kesteven Green Infrastructure Strategy (Shiels Flynn/Leisure & Environment for South Kesteven District Council, 2009)

1.3.4 The main objectives of the study are to:

1. Examine the key physical, natural, ecological, landscape, archaeological, biodiversity, historical, cultural, access and recreational assets that contribute to the functionality of the green infrastructure network.
2. Identify new and enhanced assets that are required to improve the green infrastructure network, including opportunities for landscape and habitat enhancement, and the provision of new spaces and green links.
3. Identify and define the functions of existing, proposed and potential green spaces, routes and corridors, including gaps and opportunities, to provide a coherent, functioning green infrastructure network for Grantham and extending out into the future urban extensions to provide a landscape framework to guide the layout of future development.
4. For the Sustainable Urban Extension sites, undertake a sensitivity analysis of potential locations for growth and identify opportunities for green infrastructure within, adjacent to and links between major development sites, the town centre and countryside.
5. Develop a green infrastructure network with a multiple hierarchy of green spaces provision, in terms of location, function, size and levels of accessibility/use, at every spatial scale and all geographic areas.
6. Develop principles for the protection, enhancement, creation and management of a high quality green infrastructure network.
7. Prepare an implementation strategy for delivery of new and enhanced green infrastructure and identify project costs and funding options, including for long-term management and maintenance.
8. Prepare guidelines for developers, residents and planners on the integration of green infrastructure provision into development schemes, including standards outlining what is required for high quality environment associated with new development and appropriate mitigation measures and long-term management.

1.3.5 In addition to consideration of site-specific green infrastructure assets, needs and opportunities, the Strategy gives particular attention to the long-term protection, enhancement and management of the River Witham corridor. The River Witham is a key strategic link within the sub-regional green infrastructure network, and is also a principal focus for the regeneration of the town centre and the development of the southern urban extension. This approach also applies to the Grantham Canal corridor, which is both a key strategic green infrastructure link and a focus for the regeneration of the Canal Basin adjacent to the town centre

1.4 Approach and Methodology

- 1.4.1 The process for developing the Green Infrastructure Strategy involved two key stages of work, as illustrated on **Figure 1.2**.

Stage 1 – Evidence Gathering and Analysis

- 1.4.2 Stage 1 involved creating an evidence base and analysis to fulfil the requirements of Objectives 1 – 4.
- 1.4.3 The audit of green infrastructure assets in and around Grantham involved desk-top mapping and analysis of relevant datasets, undertaken within the context of ward boundaries as appropriate. This process drew on the datasets used in the South Kesteven Green Infrastructure Strategy, enhanced where necessary with more detailed spatial data and information. Green infrastructure assets were mapped according to the following themes: biodiversity, ecosystem services, landscape and townscape character, cultural heritage, open space and access links and connectivity (see **Appendix F** for details of the mapping data used in the audit). Mapping and analysis of the socio-economic conditions of the Study Area was also undertaken to inform the identification of needs for enhanced green infrastructure provision. Drawing on the audit, a simplified analysis has been undertaken of the principal environmental and cultural assets that are considered to be a key influence in defining the network of green spaces and links for Grantham. The network of existing green spaces and links within the Study Area is also mapped and analysed by ward.
- 1.4.4 An analysis of the needs and opportunities to safeguard and enhance the green infrastructure assets in and around Grantham as part of a connected and multi-functional network of green spaces and links was undertaken. This analysis was based on interpretation of available datasets, a review of supporting strategies and documents, field visits and stakeholder consultation. In relation to open space, a needs analysis of accessible natural greenspace was undertaken (see **Appendix D** for details).
- 1.4.5 An appraisal of the needs and opportunities for the long-term protection, enhancement and management of the River Witham and Grantham Canal corridors was conducted (see **Appendix B and C** for details). This involved field survey work to assess the key characteristics of the corridors and identify the key issues and needs for managing green infrastructure assets along the corridors with regards to historical significance, landscape character and setting, access and activity, and ecological significance. Taking this into account, targeted opportunities for green infrastructure improvements were identified, described and mapped in terms of landscape

enhancements, habitat enhancement/creation, access improvements, and activity/recreation facilities improvements.

- 1.4.6 Desk top and field survey work was undertaken to provide an analysis of the sensitivity of the North West Quadrant and Southern Quadrant sites, and identify opportunities for safeguarding, enhancing and creating new green infrastructure as part of a connected and multi-functional network of green spaces and links for the growth areas. The analysis identified, described and mapped sensitive features of landscape, historic, ecological and access value that are desirable to safeguard and would benefit from positive enhancement. Opportunities to create new features of landscape and ecological value and/or new access routes providing amenity benefits were also identified, described and mapped.
- 1.4.7 A stakeholder workshop was held to provide an opportunity for a range of local stakeholders to review the interim green infrastructure audit findings, and to identify and discuss needs and opportunities for green infrastructure provision in the Study Area (see **Appendix E** for details).

Stage 2 – Developing the Proposed Strategy

- 1.4.8 Drawing on the evidence base and analysis, Stage 2 involved developing the proposed Green Infrastructure Strategy to fulfil the requirements of Objectives 5 – 8.
- 1.4.9 The key tasks comprised outlining the concepts and delivery principles that underpin the Green Infrastructure Strategy; setting priorities for green infrastructure investment and defining the proposed Green Infrastructure Network for Grantham; creating an implementation strategy and action plan for delivery of green infrastructure projects; and finally, devising green infrastructure development guidelines.
- 1.4.10 A draft report was prepared, incorporating the Stage 1 and 2 findings, and made available to stakeholders for review and comment. The draft Green Infrastructure Strategy was updated to reflect stakeholder feedback as appropriate, and finalised.

1.5 Report Structure

Evidence and Analysis

- 1.5.1 **Section 2.0** provides an audit of the environmental and cultural assets, and social-economic influences, that are considered to be a key influence in defining the network of green spaces and links for Grantham.

- 1.5.2 **Section 3.0** provides a sensitivity analysis of Grantham’s Growth Areas in the North West and Southern Quadrants. Opportunities for safeguarding, enhancing and creating new green infrastructure as part of a connected and multi-functional network of green spaces and links are identified for each Quadrant.

The Proposed Strategy

- 1.5.3 **Section 4.0** sets out the proposed Green Infrastructure Strategy for Grantham to 2026 in support of the vision, objectives and policies of the Area Action Plan. The overarching concepts of the Green Infrastructure approach that underpin the Strategy are explained, together with a series of core principles for guiding the implementation and delivery of Green Infrastructure to support the sustainable regeneration and growth of Grantham.
- 1.5.4 **Section 5.0** sets out the proposed Green Infrastructure Network for Grantham, which reflects the overarching concepts set out in Section 4.0 and provides a strategic framework for guiding investment in green infrastructure implementation and delivery.
- 1.5.5 **Section 6.0** outlines the proposed Implementation Strategy for delivery of the Green Infrastructure Strategy. It identifies delivery mechanisms and potential funding sources, and suggests a range of green infrastructure projects which are supported by an ‘outline’ action plan to guide project delivery. The action plan includes an estimate of indicative costs required to take forward the delivery of the green infrastructure projects.
- 1.5.6 **Section 7.0** provides guidelines for embedding green infrastructure into new development schemes, including standards for the quantity, quality and accessibility of green space provision. These guidelines are intended to be of value for developers, residents and planners in helping inform pre-application discussions and consultations, evaluation of planning applications and implementation of developments.

Supporting Information

- 1.5.7 The appendices include supporting information for the Green Infrastructure Strategy. This includes supplementary information relating to the green infrastructure audit (**Appendix A**), appraisals of the River Witham (**Appendix B**) and Grantham Canal corridors (**Appendix C**); an analysis of accessible natural green space deficiency and needs (**Appendix D**); details of the stakeholder workshop (**Appendix E**); a record of datasets used (**Appendix F**); and a glossary (**Appendix G**).

2.0 GREEN INFRASTRUCTURE AUDIT

2.1 General

2.1.1 This section provides an audit of the environmental and cultural assets, and social-economic influences, that are considered to be a key influence in defining the existing network of green spaces and links for Grantham. The technical scope of the audit includes:

- Biodiversity
- Ecosystem Services
- Landscape and Townscape Character
- Cultural Heritage
- Open Space
- Access Links and Connectivity
- Socio-Economic Conditions

2.1.2 The audit includes an analysis of needs and opportunities to safeguard and enhance green infrastructure assets as part of the green infrastructure network. Supplementary information is provided in **Appendix A**.

2.1.3 The geographical scope of the Study Area for the audit is indicated on **Figure 2.1**. This broadly defined area provides sufficient geographical context to allow adequate consideration of existing and potential green infrastructure linkages between Grantham and its rural hinterland.

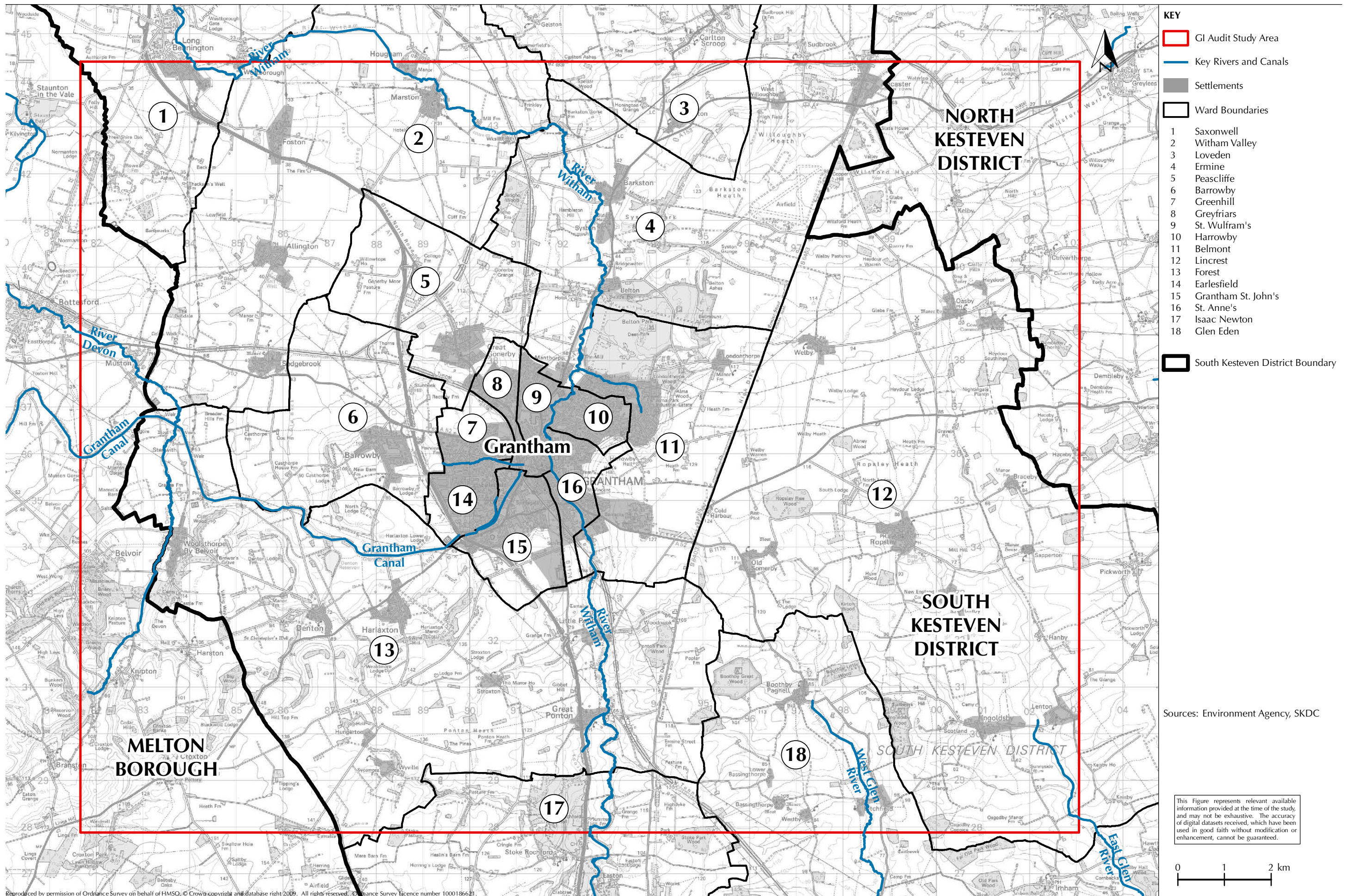
2.2 Biodiversity

Overview

2.2.1 Grantham lies on the boundary between two of Natural England's Natural Areas⁹. Grantham itself and the area to the north west of the town lie within the Trent Valley and Rises Natural Area. This mostly level or gently undulating area includes the Vale of Belvoir and is dominated by intensive, mostly arable agriculture, although small areas of valuable habitats remain, including neutral grassland, such as traditional hay meadows, and locally there remains a good hedgerow network with hedgerow and field trees.

2.2.2 The area to the south and east of the town lies within the Lincolnshire and Rutland Limestone Natural Area. The limestone of the gently undulating Kesteven Plateau is overlain in many

⁹ Natural England (website accessed Nov 2010) http://www.naturalareas.naturalengland.org.uk/Science/natural/NA_search.asp



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FIGURE 2.1
The GI Audit Study Area

areas by boulder clays, and the plateau's western edge is marked by a pronounced scarp, which is prominent in the Grantham area. Although intensive arable is again the major land use there are important woodlands and scattered areas of calcareous grassland, much of which is confined to roadside verges.

2.2.3 The River Witham runs from south to north through the area and forms an important landscape and ecological feature supporting a range of valuable habitats. The River Witham ultimately discharges into the Wash. This is the largest Site of Special Scientific Interest in England, as well as a Special Area of Conservation, Special Protection Area and Ramsar site and is a site of strategic importance.

2.2.4 The following elements/functions contribute to the Biodiversity aspects of the green infrastructure network for Grantham:

UK BAP Habitats (Figure 2.2)

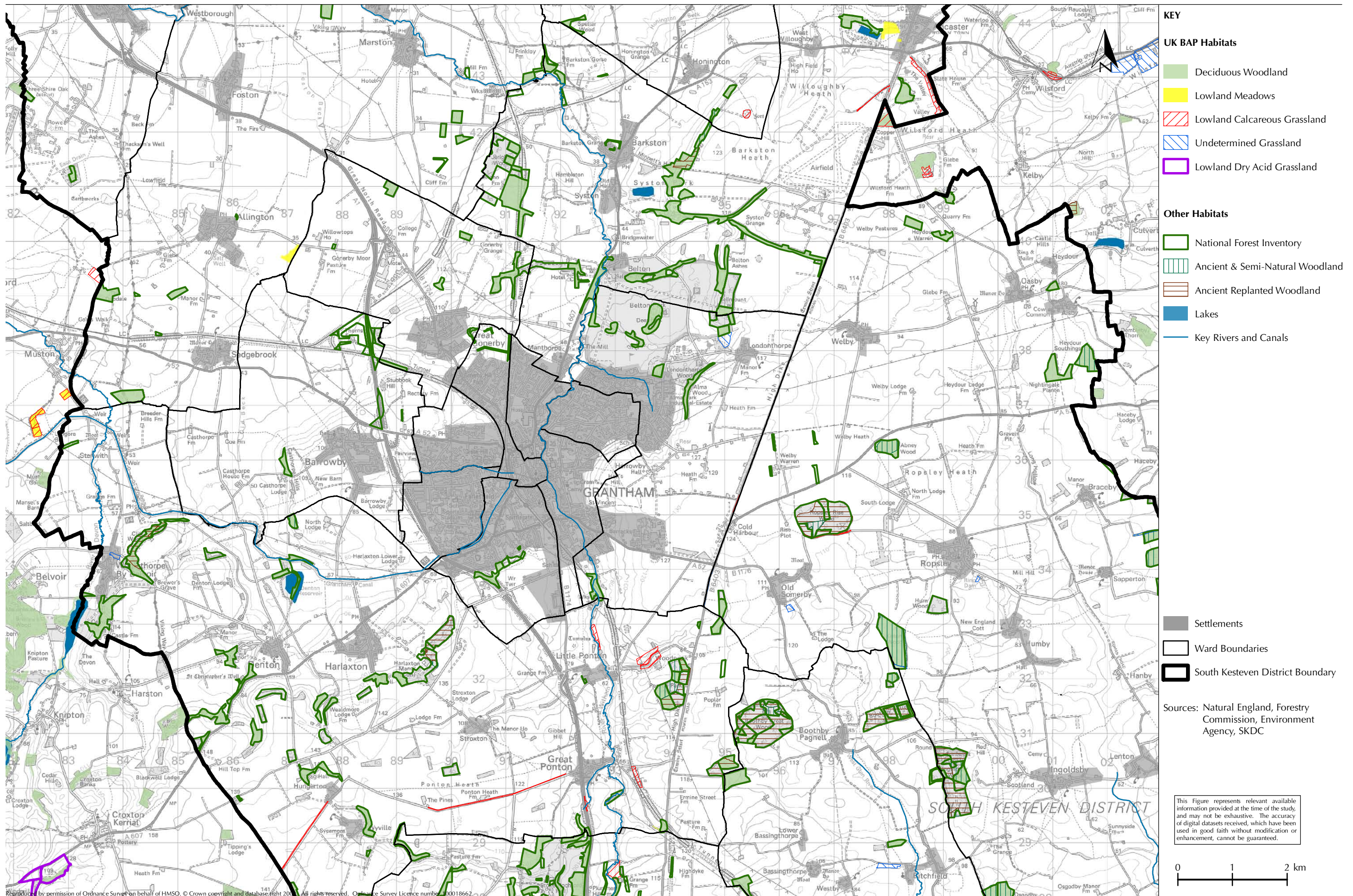
2.2.5 UK Biodiversity Action Plan habitats, largely represented by Natural England Habitat inventories, are illustrated in Figure 2.2. Deciduous woodland is the most widespread and abundant habitat, with concentrations on the Kesteven Plateau to the south east of Grantham and within estates and parks such as Belton and Syston to the north of Grantham, Belvoir to the west and Stoke Rochford to the south. Grassland, including calcareous and meadows and calcareous grassland occurs in much smaller quantities scattered throughout the Study Area.

2.2.6 Generally, BAP habitats within the Study Area are relatively small in extent and widely scattered, a pattern which is typical of much of the East Midlands. BAP habitats cover an area of 1076 Ha, which represents 3% of the Study Area. This compares with a figure of approximately 6.5% cover for the East Midlands as a whole (excluding coastal and marine habitats)¹⁰.

2.2.7 Rivers and canals, notably represented by the River Witham and Grantham Canal, are also illustrated. Outside Grantham itself the River Witham runs in a relatively natural channel and water quality is moderately good¹¹, although relatively high levels of nitrates and phosphates, for example in run off from fertiliser applications, are present. The river supports populations of important wildlife species such as otter, and a potentially nationally important population of white-clawed crayfish.

¹⁰ Chris Blandford Associates for the East Midlands Defra Network, 2010. East Midlands Environmental Evidence Base.

¹¹ Defra & the Environment Agency, 2009. River Basin Management Plan. Anglian River Basin District. Annex A: Current state of waters.



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FIGURE 2.2
Biodiversity - UK BAP Habitats

Nature Conservation Designations (Figure 2.3)

- 2.2.8 **Figure 2.3** illustrates the distribution of sites designated for their nature conservation interest. This includes both statutorily designated sites (Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs)) and non-statutory sites (Sites of Nature Conservation Interest (SNCl) and Local Wildlife Sites (LWSs)). SNCl was the original non-statutory designation in Lincolnshire and many SNCl were designated up to several decades ago. In many cases there has been little or no subsequent survey work undertaken on these sites and the current status of many SINC is unknown. LWS is the new non-statutory designation for which selection criteria have been developed. Ultimately the aim is for SNCl to be superseded by LWSs, through a process of re-survey and evaluation against LWS selection criteria. However, progress on this within the County is uneven, and little progress has been made in South Kesteven. In addition to the review of SNCl, further LWSs are being or may be designated in the light of new information, for example from surveys (e.g. see paragraph 2.2.19).
- 2.2.9 The distribution and extent of designated sites broadly follows that of UK BAP habitats described above, although fewer in number and more widely scattered. There are notable concentrations of sites on the Kesteven plateau (woodland and some calcareous grassland) and in the valley of the Witham and its tributaries (especially historic parks). The area and percentage cover of SSSIs and non-statutory sites (SNCl and LWSs) within the Study Area, and a comparison with cover for such sites in the East Midlands¹² is set out in **Table 2.1** below.
- 2.2.10 Percentage cover of SSSIs in the Study Area is significantly lower than that for the East Midlands as a whole and is still only approximately half that for the East Midlands outside The Peak District National Park and a number of large coastal sites. Indeed percentage cover of SSSIs in the East Midlands is relatively low compared to England as a whole, which has 8.2% cover. In contrast the cover of non-statutory sites is somewhat higher in the Study Area than in the East Midlands, and significantly above that for Lincolnshire, which has the lowest cover, at 1%, of such sites of all counties in the region. Indeed, South Kesteven as a whole has the second highest number of non-statutory sites of all districts in Lincolnshire.

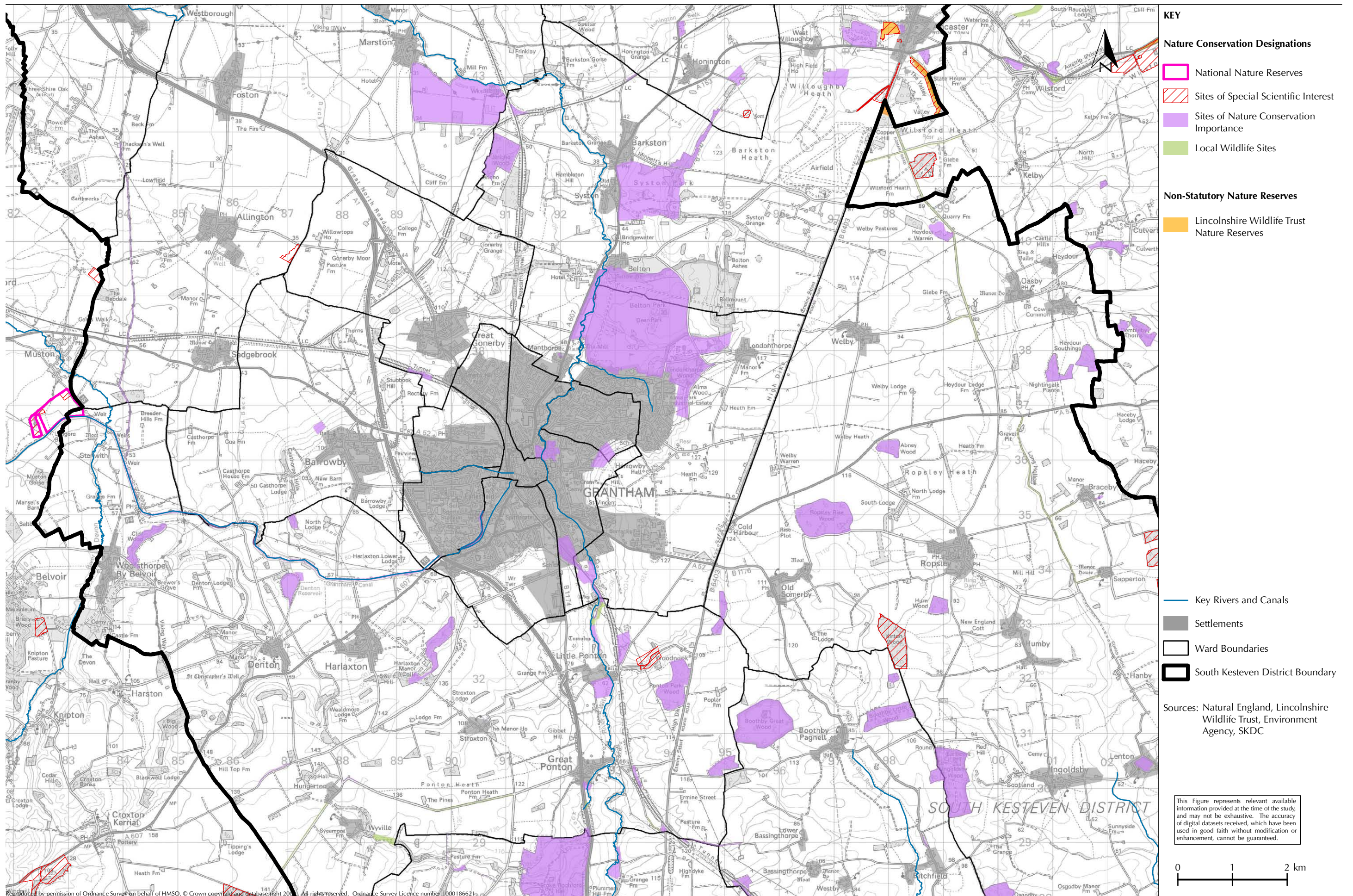
Table 2.1 – Designated Nature Conservation Sites in the Study Area and East Midlands

Designation	Study Area		East Midlands
	Area (Ha)	% cover	% cover
SSSIs ¹³	205	0.58	4.17
Non statutory sites (SNCl & LWSs) ¹⁴	1509	4.7	3.07

¹² East Midlands Environmental Evidence Base (Chris Blandford Associates for the East Midlands Defra Network, 2010).

¹³ SSSI cover in the East Midlands is strongly skewed by large sites on the Lincolnshire coast and in the Peak District National Park. Percentage cover of SSSIs in the East Midlands outside the Peak District National Park and excluding coastal sites is 1.01%.

¹⁴ Area and percentage cover of non-statutory sites is for Study Area within Lincolnshire only.



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2.2.11 **Table 1** in **Appendix A** lists the designated sites within the Study Area, their reason(s) for designation and accessibility (where known).

Ecological Networks (Figure 2.4)

2.2.12 Ecological networks are configurations of habitat or suites of sites that collectively are of sufficient size and diversity to support species and allow them to move through the landscape. Networks are therefore considered important because they make wildlife populations and habitats more robust, and enable them to respond positively to change, such as climate change. Where such networks are absent or very limited in extent populations and species are effectively isolated and ‘trapped’ within habitat islands, and are therefore more vulnerable. A recent Defra commissioned report¹⁵ identified that the conservation, enhancement and development of ecological networks will be crucial to the conservation of biodiversity and to improve the ability of the natural environment to provide many of the services that ecosystems provide (see **Section 2.3**).

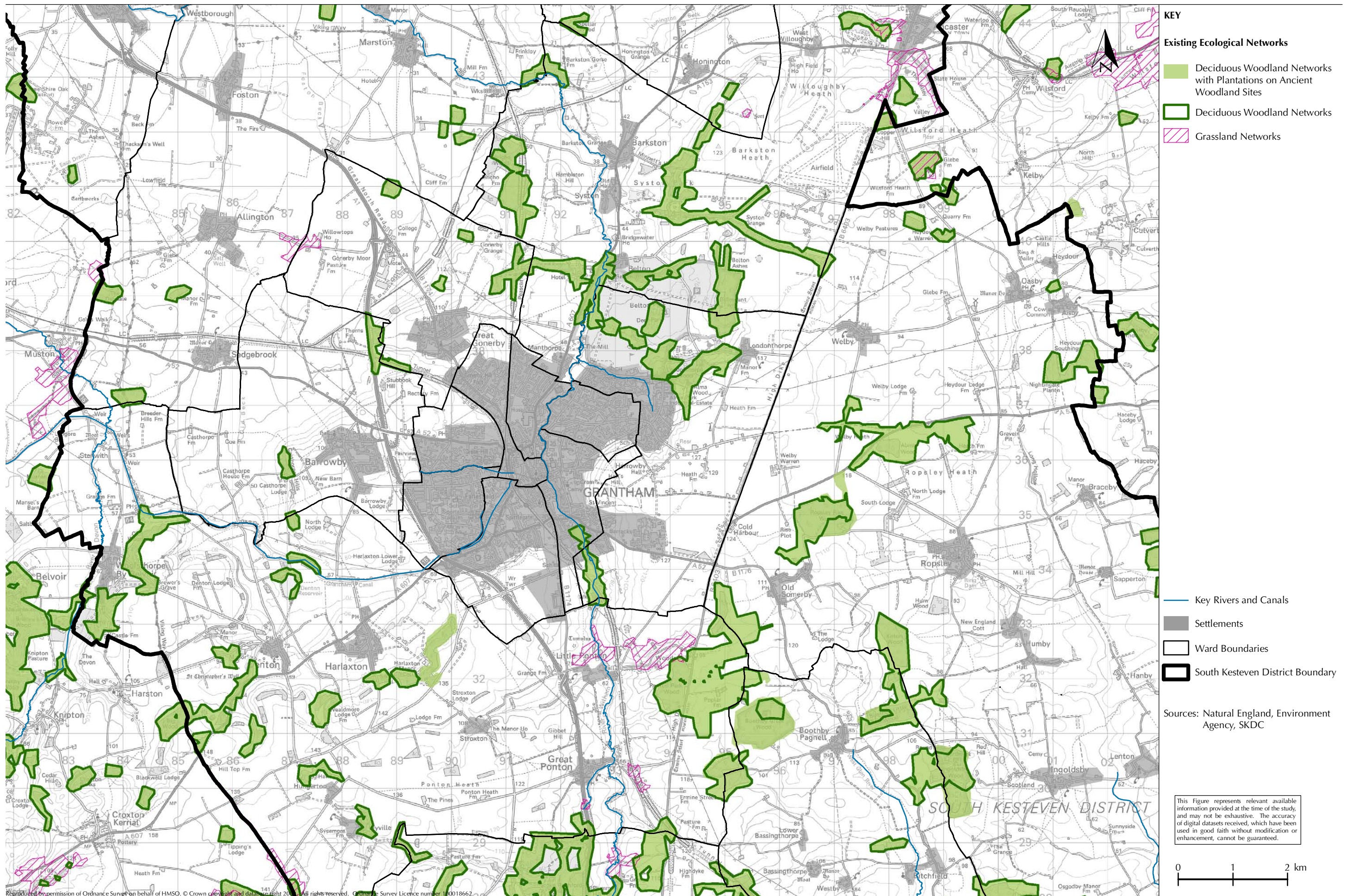
2.2.13 Habitat networks (an example or form of ecological network) were modelled for broad terrestrial habitats, such as woodland and grassland, by English Nature¹⁶ (the predecessor body of Natural England). The modelling was based on inventories of BAP habitats (described above and illustrated in Figure 2.2), and used evidence of dispersal distances for a number of wildlife species and estimates of movement costs through different habitats or land covers. These networks are illustrated for the Study Area in **Figure 2.4**. It should be noted that due to the nature of the modelling the areas illustrated include habitats or land covers (such as arable) other than those of the target habitats.

2.2.14 As woodland is the most widespread BAP habitat in the Study Area woodland networks are the most widespread and abundant, although such networks are still generally quite limited in size. Grassland networks are very limited in number and extent, which reflects the highly fragmented nature of these habitats in the area.

2.2.15 Combined with environmental data, habitat network modelling can be developed and used as a means of identifying target areas for habitat creation, in order to extend and improve habitat networks.

¹⁵ Lawton, J.H., Brotherton, P.N.M., Brown, V.K., Elphick, C., Fitter, A.H., Forshaw, J., Haddow, R.W., Hilborne, S., Leafe, R.N., Mace, G.M., Southgate, M.P., Sutherland, W.J., Tew, T.E., Varley, J., & Wynne, G.R., 2010. Making Space for Nature: a review of England’s wildlife sites and ecological network. Report to Defra.

¹⁶ Catchpole, R, 2002/03. Planning for Biodiversity – opportunity mapping and habitat networks in practice; a technical guide. English Nature.



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FIGURE 2.4
Biodiversity - Ecological Networks

2.2.16 Such 'opportunity mapping' was carried out for English Nature and the Wildlife Trusts for limestone grassland in the Lincolnshire and Rutland Limestone Natural Area¹⁷ (**Section 2.2**), part of which lies to the south and east of Grantham¹⁸. This used data on the location and extent of known existing limestone grassland sites, their condition and soils and geology to identify target areas for maintaining and creating limestone grassland. Based on this the 'Life on the Verge'¹⁹, one of the Wildlife Trusts 'Living Landscapes' projects was established in 2008 to identify, enhance and extend the network of limestone grassland in the area. The project, which runs until 2011, has included surveys, the designation of new Local Wildlife Sites, practical habitat management and habitat creation.

Needs and Opportunities²⁰

Needs

2.2.17 Apart from a small number of larger sites, such as Belton Park, existing areas of valuable habitat and designated nature conservation sites in the Grantham area are small in both number and size. This highly fragmented pattern of habitats and sites makes them vulnerable to the potential negative effects of adjoining more intensive land uses. In addition populations of wildlife species within these habitats and sites are rendered more vulnerable, by their relatively small size and isolation, to a range of potential factors, including, for example, climate change. These factors mean, as identified in a recent Defra commissioned report²¹ that maintaining the status quo will not ensure the conservation of existing habitats and sites, the species they support and the services they provide.

2.2.18 In order to conserve existing habitats and species, a coherent ecological network will be required and in order to develop such a network there is a need to:

- Decrease the fragmentation of existing habitats and sites by increasing their size and joining them up through targeted habitat creation;
- Buffer habitats and sites from the potential negative effects of adjoining more intensive land uses; and
- Make the landscape more permeable for wildlife species, for example by the creation of 'stepping stone' habitats between existing sites and creating and strengthening other habitat links such as hedgerow networks.

¹⁷ The Wildlife Trusts and English Nature, 2005. A vision for the Lincolnshire and Rutland Limestone Natural Area – opportunities for protecting limestone grassland, geology and landscape.

¹⁸ Ecological Services Ltd. for English Nature, Lincolnshire Wildlife Trust and Leicestershire and Rutland Wildlife Trust, 2005. A strategy for the re-creation of limestone grassland and integration of geological features in the Lincolnshire and Rutland Limestone Natural Area.

¹⁹ <http://www.lifeontheverge.org.uk/index.php> - accessed 11-2010

²⁰ Needs and opportunities have been identified by CBA unless otherwise specified.

²¹ Lawton, J.H., Brotherton, P.N.M., Brown, V.K., Elphick, C., Fitter, A.H., Forshaw, J., Haddow, R.W., Hilborne, S., Leafe, R.N., Mace, G.M., Southgate, M.P., Sutherland, W.J., Tew, T.E., Varley, J., & Wynne, G.R., 2010. Making Space for Nature: a review of England's wildlife sites and ecological network. Report to Defra.

- 2.2.19 There are information deficits in relation to the status or condition of many of the non-statutory designated sites, notably SNCIs, some of which have not been surveyed for decades. The network of SNCIs is in the process of being reviewed, including new surveys, against the new LWS selection criteria.
- 2.2.20 In addition, it is believed that there are habitats and sites that are likely to meet the new Local Wildlife Site selection criteria that have not been identified. The 'Life on the Verge' project has identified a number of new and candidate Local Wildlife Sites in the Lincolnshire and Rutland Limestone Natural Area. However, this project is due to finish in 2011, and there are, for example, many road verges in the area which remain to be surveyed.
- 2.2.21 A lack of comprehensive and up to date information can contribute to the continuing loss of sites and their features of interest. There is therefore a need to expedite the processes of identifying:
- The current status and condition of SNCIs;
 - SNCIs suitable for designation as LWSs; and
 - Potential new sites for designation.
- 2.2.22 In most cases wildlife habitats and sites require positive management to satisfactorily conserve their features of interest and to maximise their potential to support wildlife. Mechanisms for ensuring the appropriate management of statutorily designated sites (administered by Natural England) are relatively strong. However, although drivers and incentives for the positive management of non-statutorily designated sites do exist, including funding for such management through Environmental Stewardship, they tend to be weaker. Until recently National Indicator (NI) 197 (an indicator of local authority performance which identifies the percentage of designated wildlife sites that have received positive management in the past five years) operated as a driver for improved management of such sites. However, National Indicators (including NI 197) have now been dis-continued, and although an obligation to collect and make available data equivalent to that collected for NI 197 will continue, it is currently unclear if any objectives for the management of such sites in Lincolnshire will be set.
- 2.2.23 Despite the progress that was made under NI 197 information on the condition and management of non-statutory sites is often lacking and/or patchy. In Lincolnshire the preparation of NI 197 was based only on the management of LWSs and did not include management of SNCIs, which are overwhelmingly the most abundant non-statutory designation in South Kesteven and the Study Area. As noted above, the review of SNCIs against LWS selection criteria in South Kesteven has not started. This means that there is no information on the condition and management of most non-statutory designated sites in the District.

2.2.24 The NI 197 figure for Lincolnshire for 2009-10 was 60% and the figure for South Kesteven was very similar. However, as described above, for South Kesteven this figure was based on a very small number of sites. This means that the condition and management of many sites is unknown and many may not be receiving positive conservation management. There is therefore a need to:

- Identify the condition and management of all non-statutory sites; and
- Ensure that sites receive appropriate positive conservation management.

Opportunities

2.2.25 Related to the needs identified above there are a number of more specific opportunities, or opportunity areas, for the development of biodiversity elements of green infrastructure, or ecological networks, in the Grantham area. These have been identified on the basis that they support a relatively high concentration of existing habitats or sites, and/or include substantial habitat links or corridors, circumstances that facilitate the practical development of networks.

- **River Witham Valley**²² – In addition to the river itself there is an existing concentration of valuable habitats, including woodland, parkland, scrub, grassland and wetland in the valley. There are opportunities to enhance and extend the existing habitats (see **Appendix B**);
- **Lincolnshire limestone** – To the south and east of Grantham there are concentrations of woodland (especially Ancient Woodland) and limestone grassland. There are opportunities to enhance the woodland resource, for example by the restoration to native species of woodlands that were converted to conifer plantations, and to extend it through new woodland creation²³. There is also an opportunity to continue the work of the current ‘Life on the Verge’ project (which ends in 2011) to enhance and extend networks of limestone grassland in the area; and
- **Grantham Canal Corridor**²⁴ – The Grantham Canal forms a linear landscape feature running broadly westward from Grantham which supports aquatic habitats as well as, for example, woodland, scrub and hedges. There are opportunities for habitat creation in areas adjoining the canal, especially where these link to existing valuable habitats, such as woodland. The canal itself would represent a green corridor linking these areas of habitat, thereby facilitating the movement of species through the landscape (see **Appendix C**).

2.3 Ecosystem Services

2.3.1 Natural ecosystems provide a range of benefits in terms of resources or processes, known collectively as ‘Ecosystem Services’. Examples of ecosystem services include:

- **Provisioning** – such as food and energy crops;

²² Opportunity identified by CBA.

²³ Opportunity identified by CBA.

²⁴ Opportunity identified by CBA.

- **Regulating** – such as flood control, water purification, air quality maintenance, countering the urban ‘heat island’ effect, and pollination;
- **Cultural** – non-material benefits that people obtain from the natural environment; and
- **Supporting** – services necessary for the production of all other ecosystem services, such as nutrient recycling and soil formation.

2.3.2 The following elements/functions contribute to the Ecosystem Services aspects of the green infrastructure network for Grantham.

Food Production

2.3.3 The Grantham area, and more widely Lincolnshire and the East Midlands, are amongst the most agriculturally productive areas of the country. South Kesteven District has a total of 74,164 ha of farmed land, representing approximately 79% of the district²⁵. Of this over 70% is used for arable crops. This reflects the agricultural potential of the land within the District. The Agricultural Land Classification (ALC) classifies agricultural potential of land with the most productive and versatile land identified as ALC grades 1-3. Approximately 94% of South Kesteven District falls within these ALC grades, compared to approximately 65% for England as a whole.

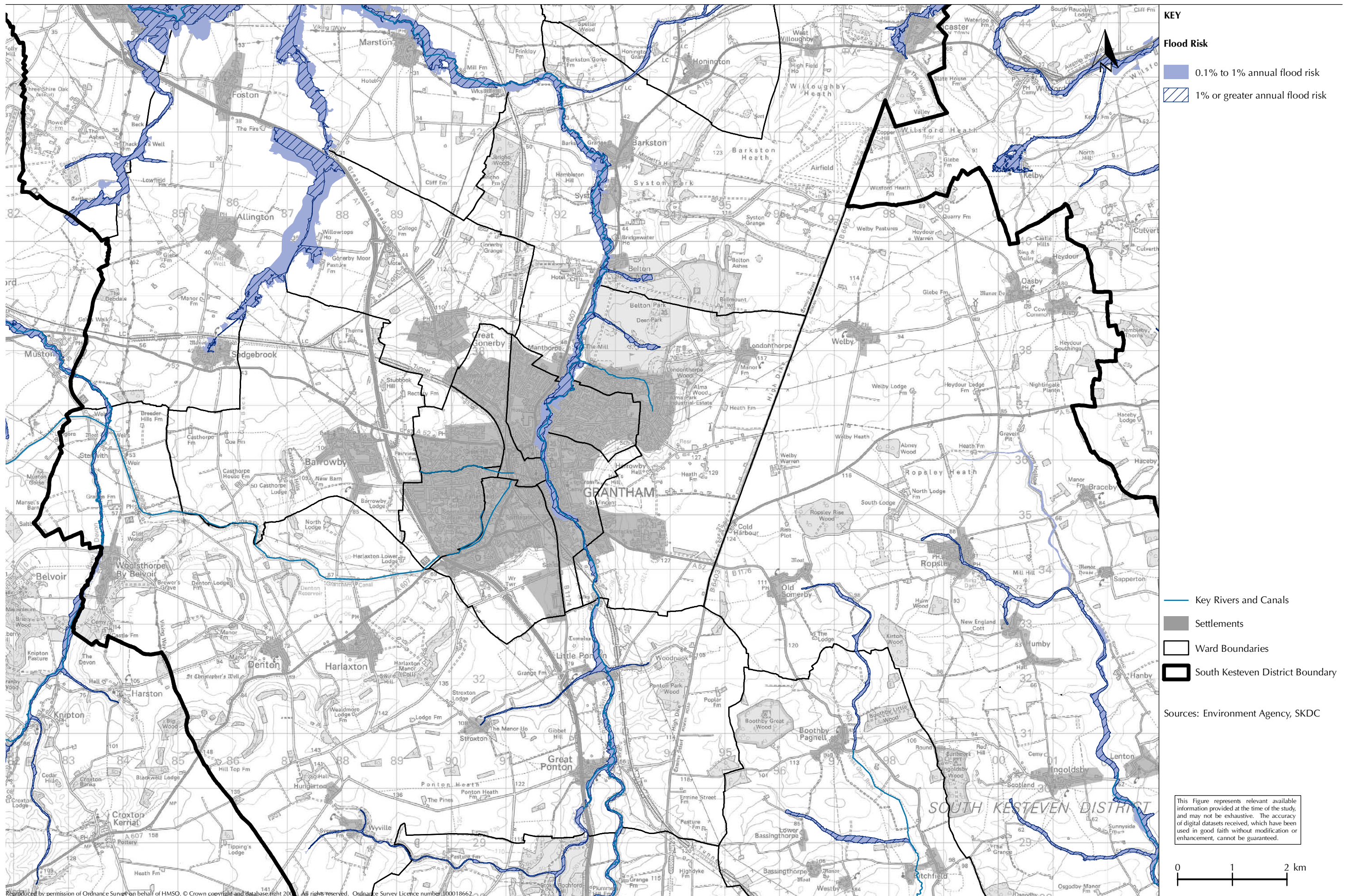
2.3.4 The relatively intensive nature of the agriculture in the area can have a number of negative impacts on the natural environment. With the aim of reducing these impacts the government has, for a number of years, operated agri-environment schemes (such as Countryside Stewardship and Environmental Stewardship) that provide incentives for the implementation of sensitive farming methods. Approximately 61% of the Study Area currently has agreements in place under one of these schemes.

2.3.5 In addition to agriculture, allotments represent an important means of local food production. Within the Study Area there are 14 allotment sites covering an area of approximately 25.5 ha. These sites form an important component of the green infrastructure network (see **section 2.6**)

Flood Risk (Figure 2.5)

2.3.6 Appropriately managed green infrastructure habitats in undeveloped floodplain can store flood water, which can help to protect adjoining urban areas from flooding. For example, the potential for upstream flood storage to reduce costs associated with other flood risk

²⁵ Defra June Survey of Agriculture and Horticulture, 2007 results for local authorities.
<http://www.defra.gov.uk/evidence/statistics/foodfarm/landuselivestock/junesurvey/results.htm>



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FIGURE 2.5
 Ecosystem Services - Flood Risk

management strategies is identified in the Environment Agency's River Witham Catchment Flood Management Plan²⁶.

- 2.3.7 In addition, land use and land cover also significantly affect factors such as interception of rainfall by vegetation, evaporation levels and surface permeability. These have significant effects on the rate of discharge within watercourses, i.e. the rate at which water moves through a catchment. For example, woodland tends to intercept and evaporate relatively large quantities of rainfall/water due to the greater surface area of its foliage than other vegetation or un-vegetated areas. Through their effect on the discharge rate all these factors can significantly influence flood risk.
- 2.3.8 **Figure 2.5** illustrates the extent of flood risk zones within the Study Area. Both the 100 year (1% or greater annual risk) and 1,000 year (0.1% to 1% annual flood risk) flood risk zones are illustrated. To the south of Grantham the flood zone of the River Witham is relatively narrow, although part of the Southern Sustainable Urban Extension close to the river is at risk. The flood zone is also relatively narrow through much of Grantham itself, but there are parts of Grantham adjoining the river that are vulnerable to flooding, although the area and number of properties concerned are small¹². The floodplain of the River Witham generally broadens to the north of the town although most of this is undeveloped within the Study Area.

Water Resources

- 2.3.9 Water resources are essential for a range of human uses, including domestic water supply and industrial and commercial uses, and water is abstracted from watercourses and groundwater (aquifers) to meet these demands. The amount of water within watercourses, in terms of volume and variability of flow, is also critical to their ecological condition and the status of the species that depend on them.
- 2.3.10 As noted above, land use within catchments can have significant effects on the rate of discharge within watercourses. This affects the stability or variability of flows in a watercourse and can in turn reduce the water resource available for use as well as having impacts on the ecosystem. Features of land use such as removal of vegetation and extensive drainage systems, often associated with intensive agriculture, tend to increase the discharge rate and therefore the variability or volatility of flow within watercourses. Green Infrastructure land uses have the potential to increase surface permeability and water storage capacity within catchments and therefore decrease discharge rate.

²⁶ Environment Agency, 2009. River Witham Catchment Flood Management Plan

2.3.11 Within the Study Area water resources within the River Witham have been identified by the Environment Agency as being 'over licensed'²⁷. This indicates that under the full licensed scenario (i.e. if all licenses for abstraction were fully utilized), ecological damage could occur. In addition, the upper reaches of the River Witham are recognized as suffering from seasonal flow stress, with very low flows or near drying out of the tributaries in some summers. This has the potential to have significant negative impacts on the ecology of the river, including for example, the nationally important population of native white-clawed crayfish.

Water Quality

2.3.12 Water quality in rivers can be negatively affected by diffuse pollution sources associated with adjoining land uses, such as nitrates and phosphates in fertilizer run-off and silt from soil erosion. Agricultural practices contribute significantly to these sources and the catchment of the River Witham in the Study Area is dominated by intensive arable agriculture.

2.3.13 The ecological status of the River Witham is moderate²⁸ and elevated levels of nitrates and phosphates have been identified from water quality testing at the confluence of the Witham with the Cringle Brook at Great Ponton²⁹. Low input land uses within catchments, including green infrastructure components, can help to reduce levels of diffuse pollution and such land uses located in areas adjoining watercourses can help to buffer them from the potential negative effects of more intensive land uses.

Air Quality (Figure 2.6)

2.3.14 Vegetation, especially trees and woodland, as a component of green infrastructure can help in moderating problems of poor air quality, for example by capturing pollutants such as particulates³⁰. There are local air quality issues in parts of Grantham and three Air Quality Management Areas (based on recorded exceedence of standards for a range of different pollutants³¹) have been declared in the town³² at (see **Figure 2.6**):

- Wharf Road;
- Meres Road adjacent to the A1; and
- Welwyn Close, Rosemary Crescent and Denton Avenue adjacent to the A1.

²⁷ Environment Agency, 2004. River Witham Catchment Abstraction Management Strategy.

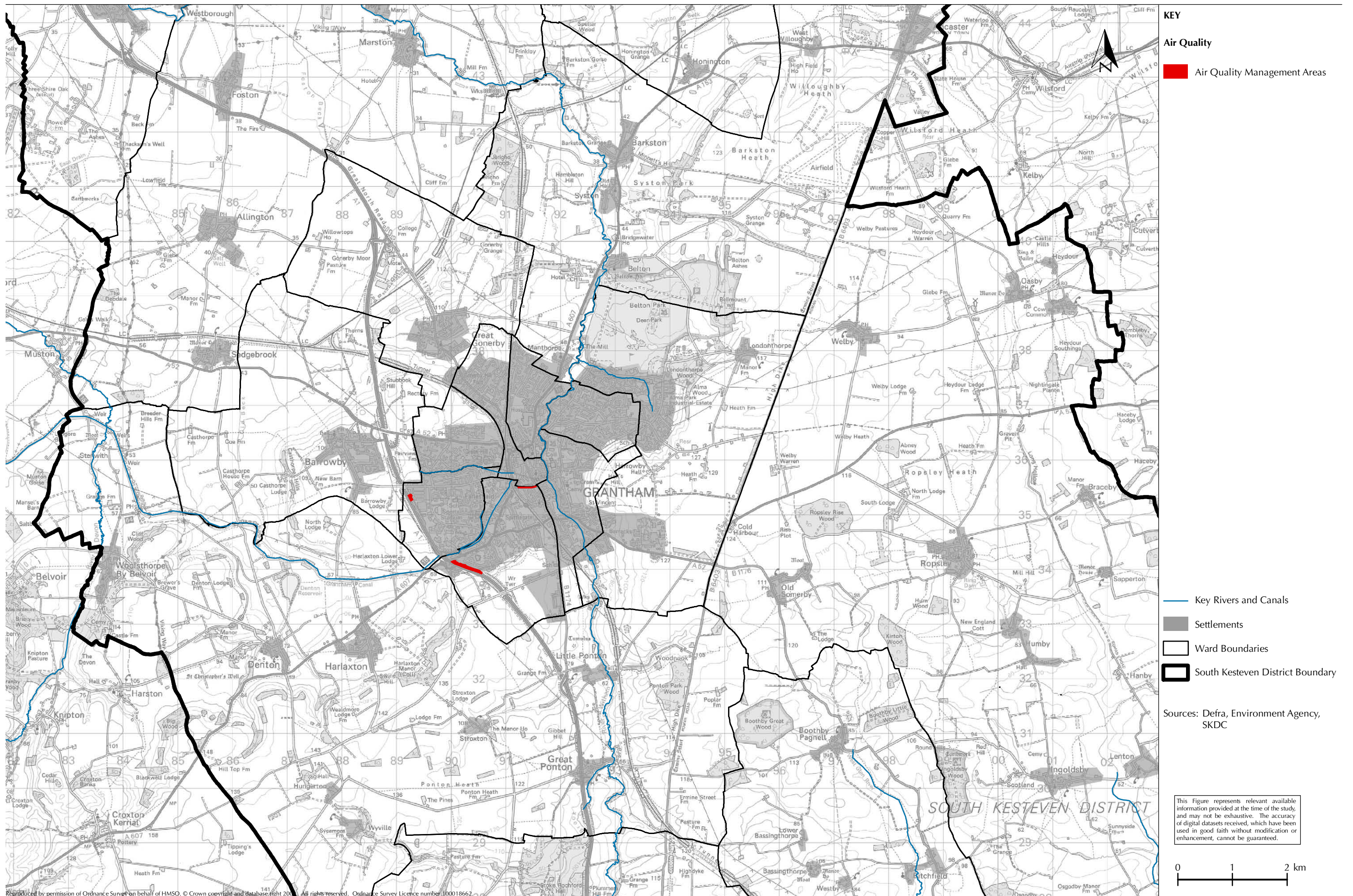
²⁸ Defra & the Environment Agency, 2009. River Basin Management Plan. Anglian River Basin District. Annex A: Current state of waters.

²⁹ Jacobs for Lincolnshire County Council, 2009. Grantham Southern relief Road. EIA Scoping Report.

³⁰ Department of the Environment, 1996. Urban Woodland and the Benefits for Local Air Quality. Research for Amenity Trees No. 5. London: Department for Communities and Local Government.

³¹ <http://www.airquality.co.uk/standards.php#std>

³² http://aqma.defra.gov.uk/maps.php?la_id=242



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FIGURE 2.6
Ecosystem Services - Air Quality

Pollination

- 2.3.15 Pollination is a vital process for plant reproduction and much pollination is carried out by pollinators, most of which are insects, especially bees. Pollination is also vital for a range of crops. For example, in the UK the annual value of honeybee pollination alone has been estimated to be in the order of £120-200 million³³ and the value of all pollination has been estimated at £440 million³⁴.
- 2.3.16 There has been considerable concern in recent years as a result of the decline in the abundance and diversity of pollinators. Such a decline has been recorded in the abundance and diversity of wild bees³⁵, one of the most important pollinator groups in the UK - declines in bumblebees have been especially pronounced in the English Midlands³⁶. These declines have been largely attributed to changes in land use, especially habitat loss³⁷ and the intensification of agriculture in recent decades³⁸. In order to address some of these issues there is potential for habitats and resources which would help to support pollinator species and populations, such as floral resources, to be provided as part of green infrastructure.

Needs and Opportunities³⁹

- 2.3.17 Key needs and opportunities for safeguarding and enhancing these elements/functions as part of Grantham's green infrastructure network are listed below⁴⁰:
- Seek a satisfactory balance between productive agriculture and the long term protection of the environment, for example through increasing uptake and improved effectiveness of agri-environments schemes;
 - Assess the demand for allotments and community gardens to encourage local food production and associated benefits and incorporate allotments and community gardens in new developments;
 - Seek green infrastructure opportunities within the River Witham catchment to reduce or protect against flooding, conserve water resources and enhance water quality, including protection of the flood zone from development and land management practices (delivered for example through agri-environment schemes) that reduce discharge rate and the level of diffuse pollution;
 - Increase tree planting within the Grantham urban area to help control air pollution within the town, and especially within and adjoining those areas where air quality has been identified as an issue (Air Quality Management Areas); and

³³ <http://ww2.defra.gov.uk/food-farm/crops/bee-health/>

³⁴ Wentworth, J., for the Parliamentary Office of Science and Technology, 2010. Postnote number 348; Insect Pollination.

³⁵ Biesmeijer, J. C., Roberts, S. P. M., Reemer, M., Ohlemueller, R., Edwards, M., Peeters, T., Schaffers, A. P., Potts, S. G., Kleukers, R., Thomas, C. D., Settele, J., Kunin, W. E., 2006. Parallel declines in pollinators and insect-pollinated plants in Britain and the Netherlands. *Science* **313**, 351-354.

³⁶ Williams, P.H. and Osborne, J.L., 2009. Bumblebee vulnerability and conservation worldwide. *Apidologie* **40**, 367-387.

³⁷ Brown, M.J.F. and Paxton, R.J., 2009. The conservation of bees: a global perspective. *Apidologie* **40**, 410-416

³⁸ Goulson, D., 2003. *Bumblebees, their ecology and conservation*. Oxford: Oxford University Press.

³⁹ Needs and opportunities have been identified by CBA unless otherwise specified.

⁴⁰ Needs and opportunities identified by CBA.

- Increase resources for pollinator species and populations, for example by increasing the quantity and quality of perennial floral resources within green infrastructure provision.

2.4 Landscape and Townscape Character

2.4.1 The following elements/functions contribute to the Landscape and Townscape Character aspects of the green infrastructure network for Grantham.

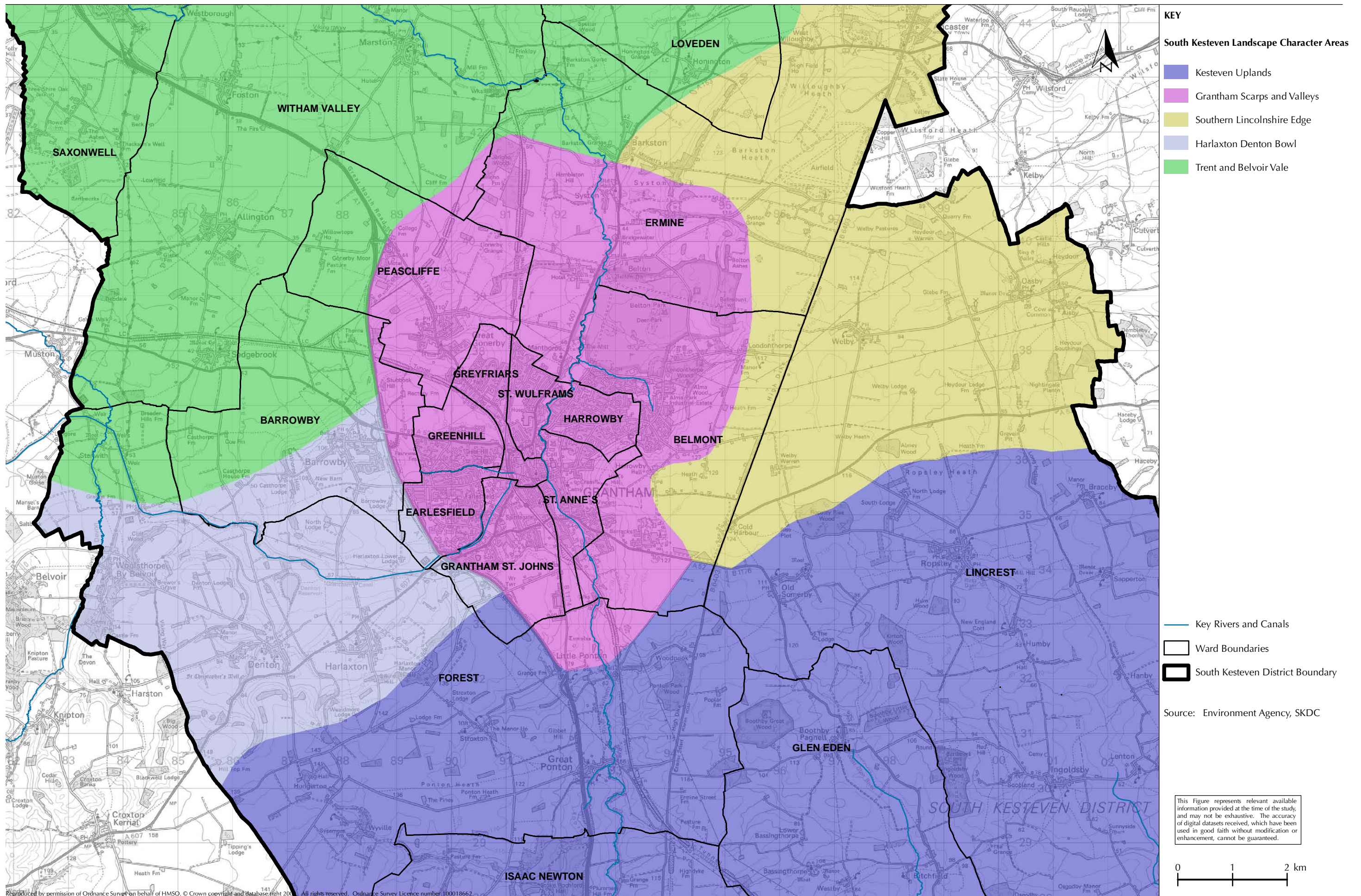
Landscape Character (Figure 2.7)

2.4.2 The landscape context of Grantham is predominantly rural, with areas of mixed farmland, dissected by the corridors of the River Witham and Grantham Canal, interspersed with small villages which are located at the periphery of the town. The River Witham runs through Grantham, and to the south of the town the river is situated within a relatively broad river valley with pronounced valley sides to the east and west. The Grantham Canal runs through part of the western edge of the town and is situated within a cutting along its first section (to the west of the A1 road corridor). Further to the west, the Canal is no longer in a cutting and has a character which mirrors that of a natural river corridor.

2.4.3 To the north of Grantham, the Belton estate provides the setting of the town. The Belton estate encompasses c.505 hectares of gently undulating designed parkland, set within the valley of the River Witham. At the eastern edges of the park, the ground rises steeply to a high plateau, which is covered by thick belts of woodland. South westerly views are afforded across Grantham from the plateau, which provide a sense of visual containment to the town within views eastwards. Overall the available views, for example from the area around Belmont Tower, are very extensive and encompass significant areas of countryside to the south, west and north. Further prominent ridges to the north of Great Gonerby, Syston and Hambleton Hill also provide a sense of enclosure within views from the town and across its landscape setting.

2.4.4 The South Kesteven Landscape Character Assessment⁴¹ has identified a series of distinct Landscape Character Areas, which are shaped by a combination of geology, topography, soils, land use, field patterns and human settlement, and are distinctive landscapes and places of individual character. The five Landscape Character Areas within the Study Area are shown on **Figure 2.7** and described in **Table 2** in **Appendix A1**.

⁴¹South Kesteven District Council, January 2007. The South Kesteven Landscape Character Assessment.



GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.7
Landscape Character

Townscape Character (Figure 2.8)

2.4.5 SKDC has commissioned a Townscape Character Assessment for Grantham to inform the emerging Urban Design Framework. The Townscape Character Assessment aims to provide a sound understanding of the origins and historic evolution of the town to inform future decisions about development. The draft Townscape Character Assessment report is currently in preparation, however preliminary mapping is available which defines 17 Townscape Character Areas as shown on **Figure 2.8** and listed in **Table 3** in **Appendix A1**.

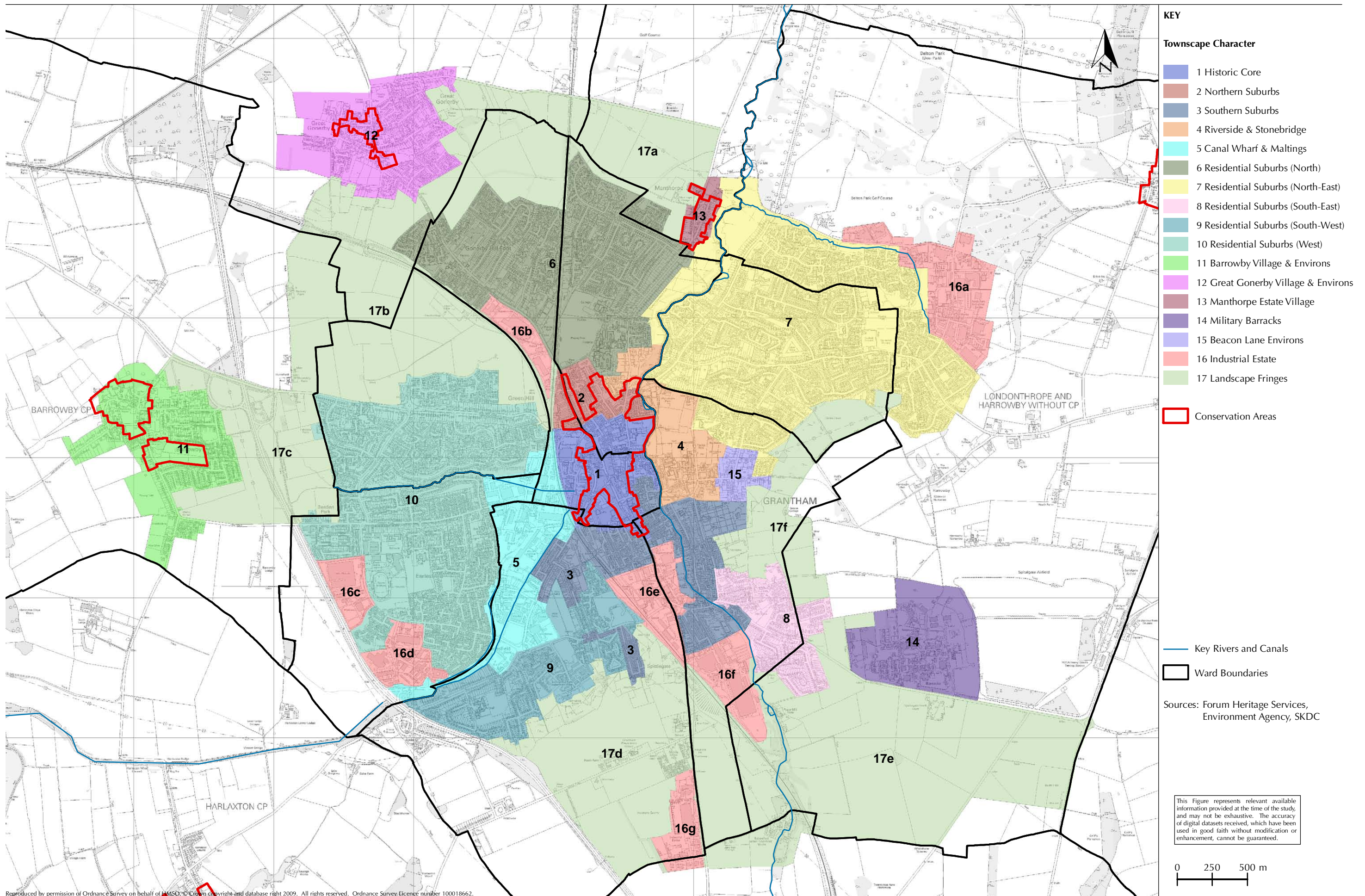
Needs and Opportunities⁴²

2.4.6 Key needs and opportunities for safeguarding and enhancing these elements/functions as part of Grantham's green infrastructure network are listed below:

- Landscape enhancements of large industrial and commercial warehouses and factories within the urban fringe, using mature vegetation as screening, in places such as at Tollemache Road industrial estate and off the B1174 to the northwest of Paper Mill Farm;
- Protect and improve field boundary condition by maintaining hedgerows and planting new hedgerow trees within the landscape setting of the town to maintain the existing landscape pattern and structure and screen potential new development;
- Protect the setting of parkland landscapes such as Belton⁴³ and Harlaxton within the fringes of Grantham and the wider Study Area;
- Protect topography and wooded skylines as key visual sensitivities – both in the north (encompassing a series of treed and wooded ridges) and in the south in the context of Grantham's valley location and the nature of potential development. The latter would be visually prominent if situated on valley sides or ridgelines;
- Protect and enhance woodlands as key landscape features and consider their screening function with potential new development;
- Maintain key views to landmarks such as St Wulfram's church from the landscape setting of Grantham and to smaller church towers/spires; and intervisibility between wooded ridges, landscape setting and the town centre, which contribute to recognisable sense of place;
- Seek opportunities to increase green links and access to the wider countryside, particularly along the river and canal corridors and pedestrian links between the town and landscape setting. There is a particular opportunity to link pedestrian access along the river and canal corridors to the town centre, where access is currently interrupted (see **Appendices B** and **C**); and
- Maintain physical and visual separation between the main urban area of Grantham town and surrounding nearby villages such as Barrowby and Great Gonerby, and maintain the traditional form and character of these villages.

⁴² Needs and opportunities have been identified by CBA unless otherwise specified.

⁴³ It should be noted that a Setting Study for Belton was prepared for the National Trust in 2010.



GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.8
Townscape Character

2.5 Cultural Heritage

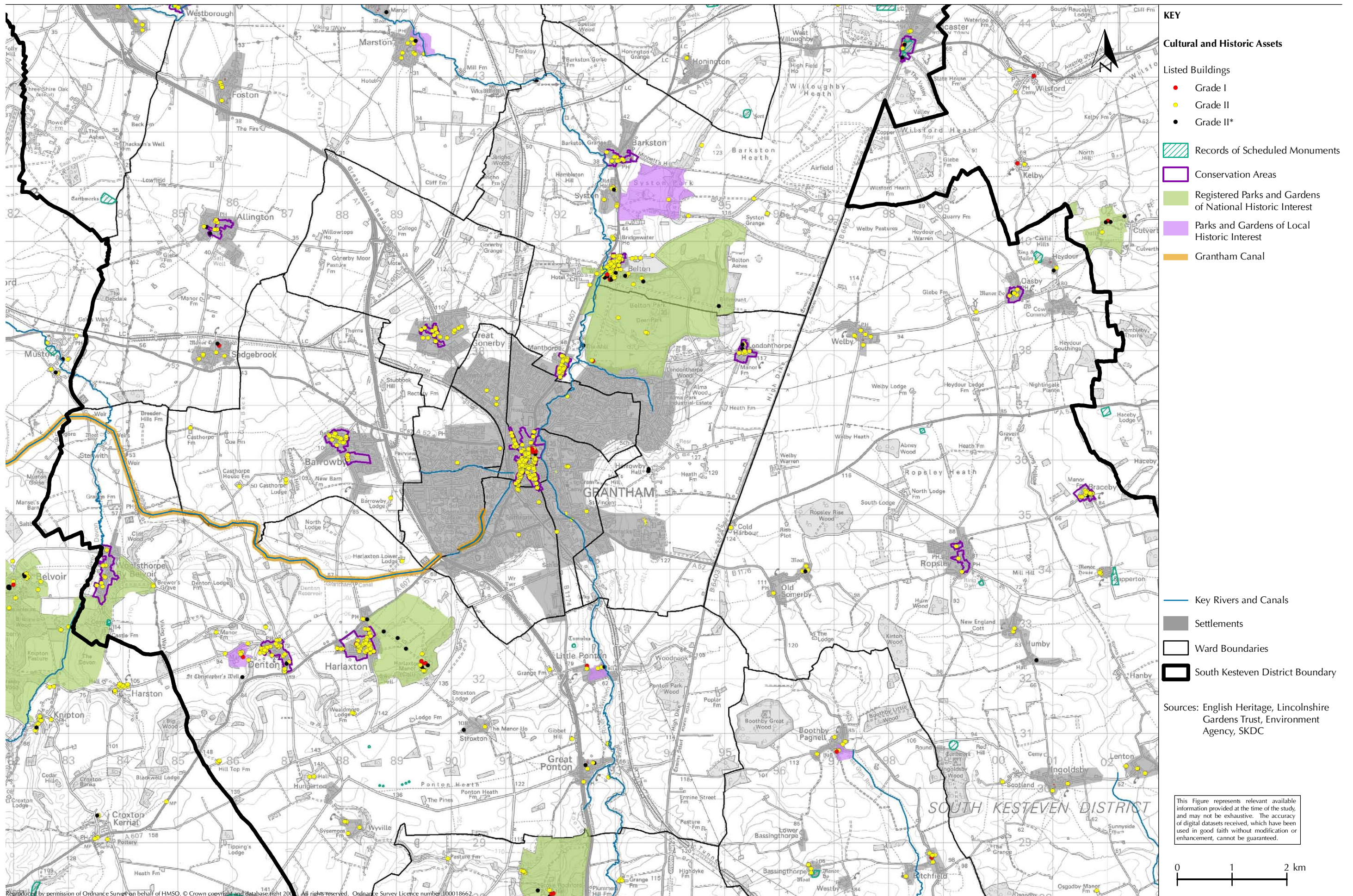
2.5.1 The cultural landscape in the Study Area is significant in terms of archaeology, including prehistoric barrows (burials) and flint scatters, possible routes of Roman roads and Roman/Saxon pottery shards. Medieval farming practices are also visible within the landscape in the form of ridge and furrow (which is evident both in fields surrounding Grantham and within the encapsulated countryside near the town centre). This rich archaeological evidence suggests settlement and use of the landscape of the Study Area from prehistory to the present day, in excess of 4000 years.

2.5.2 The townscape of Grantham has origins in the Anglo-Saxon period (6th/7th century) and its boundaries are still evident in the street layout and the pattern of watercourses. By the middle of the 11th century, Grantham was an important market town, the centre of a region of Saxon and Danish villages, where the production and sale of wool and leather trade created the riches of the town. Grantham grew with the introduction of the Canal in the late 18th century and the railway in the 19th century. The town was an important coaching stage on the Great North road between London and Edinburgh from 1600 to the mid-19th century. This generated a major source of wealth and employment, and contributed to the town centre's 18th century character. The numerous areas of Victorian terraces in Grantham, which provided housing for those working in the town's expanding 19th century factories and industries, bear witness to the growth Grantham was experiencing at that time. Grantham also grew significantly in the 20th century, notably in the post war era, resulting in several suburban housing estates on the periphery of the town. The town centre features a large number of both Grade I and Grade II listed buildings together with a number of Grade II* listed buildings. It also includes two scheduled monuments (Conduit House and the Market Cross, both in the Market Place) and a large conservation area. This includes St. Wulfram's Church, which is a key historic and visual landmark.

2.5.3 The following elements/functions contribute to the cultural and historic aspects of the green infrastructure network for Grantham (see **Figure 2.9a** and **2.9b**):

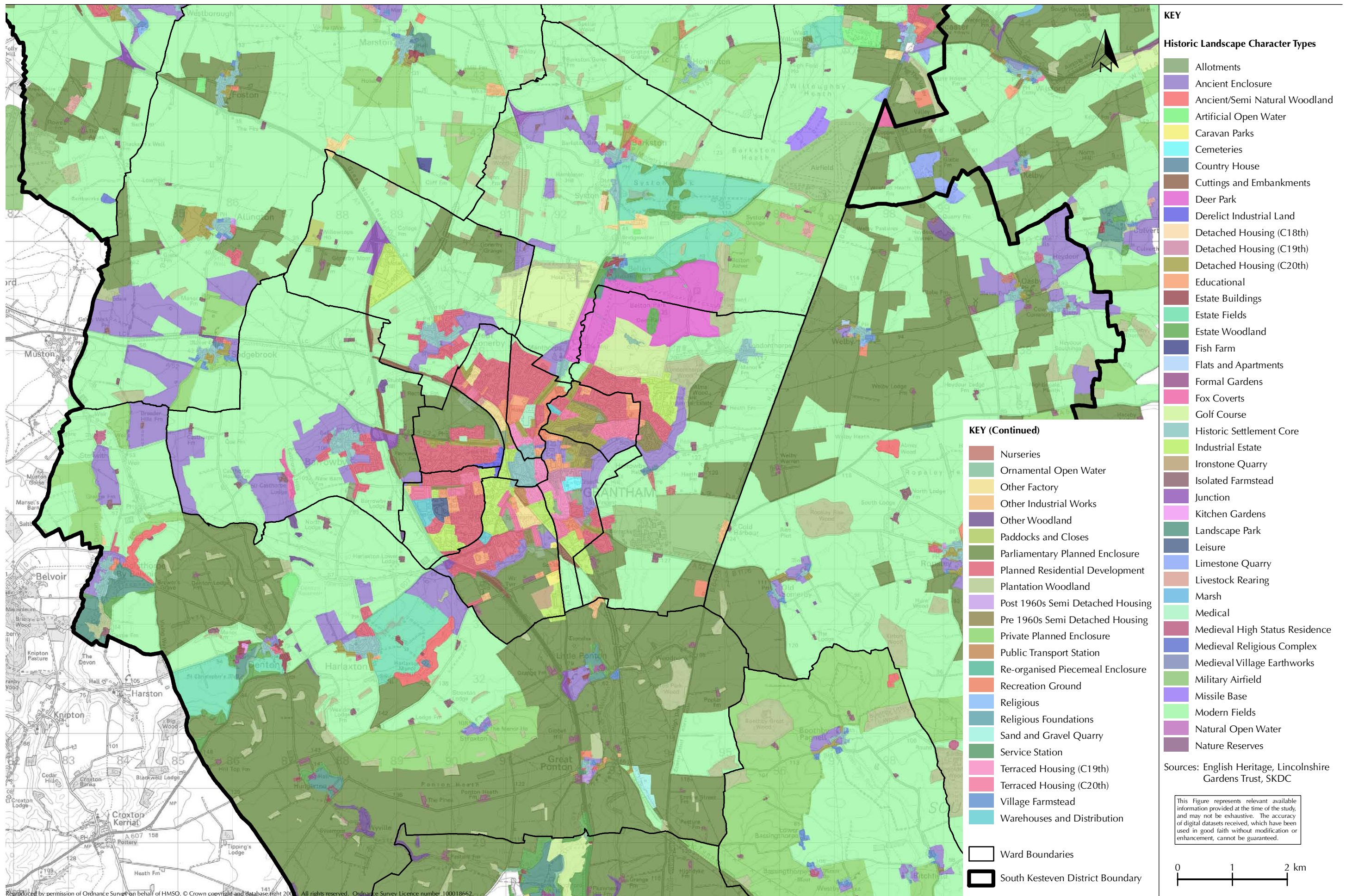
- Registered Parks and Gardens of National Historic Interest;
- Parks and Gardens of Local Historic Interest⁴⁴;
- Scheduled Monuments;
- Listed Buildings;
- Conservation Areas;
- Historic Landscapes (see **Figure 2.9b**); and
- Aspects of the wider cultural townscape/landscape.

⁴⁴ Identified at the stakeholder workshop by Lincolnshire Gardens Trust



GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.9a
Cultural and Historic Assets



- 2.5.4 **Table 4** in **Appendix A** provides a summary of the cultural heritage assets within the Study Area.
- 2.5.5 Lincolnshire County Council are currently undertaking a Historic Landscape Characterisation (HLC) Project which covers the Study Area and divides the historic landscape into a series of different Historic Landscape Character Types based on field by field analysis of historic maps and other historic sources⁴⁵. Whilst the data produced for the HLC project is largely complete in most respects, interpretations of the data⁴⁶ for the purpose of this Study are not based on the HLC Project report.
- 2.5.6 65 of Lincolnshire's Historic Landscape Character Types fall within the Study Area. A large proportion of the fields to the east and west of Grantham town centre comprise modern fields (which are likely to have been enclosed and improved post WWII). The modern fields are interspersed with parliamentary planned enclosure fields to the northwest and southwest of the town. Pockets of ancient enclosure fields surround many of the villages at the periphery of the town, forming some of the oldest landscapes of the Study Area. A large swathe of planned Parliamentary Enclosure fields is predominant to the south of Little Ponton, between Hungerton and Great Ponton. Country houses and deer parks are another key historic landscape feature within the Study Area (in the same locations as the identified nationally and locally important historic parks and gardens above).

Key Needs and Opportunities⁴⁷

- 2.5.7 Key needs and opportunities for safeguarding and enhancing these elements/functions as part of Grantham's green infrastructure network are listed below:
- Several of the cultural assets within the periphery of the town are at risk from agricultural damage and require improved management/enhancement (as identified by the English Heritage 'At Risk' Register). There is an opportunity to improve management of these sites and encourage site-specific management strategies or plans to be developed to address these risks;
 - Features of the historic and cultural landscape (as set out above) should be conserved and managed to create a focus for new green infrastructure and structural landscape features within development, and as enhancements to the wider townscape/landscape. They contribute to recognisable sense of place and identity (particularly listed buildings within views) and could provide key destinations and foci within the Green Infrastructure Strategy;
 - Few of the historic sites, with the exception of some Listed Buildings and Scheduled Monuments within Grantham town centre, make provision for interpretation and education. There is an opportunity to increase public awareness of significant cultural assets,

⁴⁵ Lord, J. and MacIntosh, A. (forthcoming) *The Lincolnshire Historic Landscape Characterisation Project*, English Heritage/Lincolnshire County Council/North Lincolnshire Council.

⁴⁶ Provided by Lincolnshire County Council and jointly funded by all Districts in Lincolnshire

⁴⁷ Needs and opportunities have been identified by CBA unless otherwise specified.

particularly within the periphery of the town and to actively promote visits/access to these sites as potential education and tourism destinations (whilst also taking into account the need to protect/enhance these sites);

- There is an opportunity to link the interpreted heritage within the town centre, to the wider Study Area, by providing signage and interpretation boards which encourage people to explore wider heritage assets within the periphery of the town;
- There are opportunities to promote some historic assets, such as Scheduled Monuments and the Grantham Canal, as part of heritage 'themes' for the Study Area - for example, 'visits to Grantham's Anglo-saxon past';
- Consultation revealed that there are several significant prehistoric sites (such as the Scheduled Monument barrows to the south of Grantham) which could be utilised as part of a 'Prehistoric Grantham' interpreted trail around the periphery of the town;
- The Study Area is rich in historic parks and gardens of both national and local interest. Whilst Belton Park is a popular visitor destination and Harlaxton, Stoke Rochford and Belvoir Castle are accessible on payment of an admission fee/by appointment, there is an opportunity to create interpretation and links between these parklands in terms of associated architects, garden/landscape designers, builders, engineers and surveyors; and
- There is also a lack of connectivity in terms of pedestrian links between the cultural sites, in particular the scheduled monuments within the periphery of the town⁴⁸. There is potential to create and enhance pedestrian links between these sites and also with the Grantham town centre Conservation Area as well as shared green links (e.g. for cyclists and horse riders) using the cultural sites as destination points/foci (which could be an incentive to use green routes/links).

2.6 Open Space

Open Space Sites – Strategic Overview

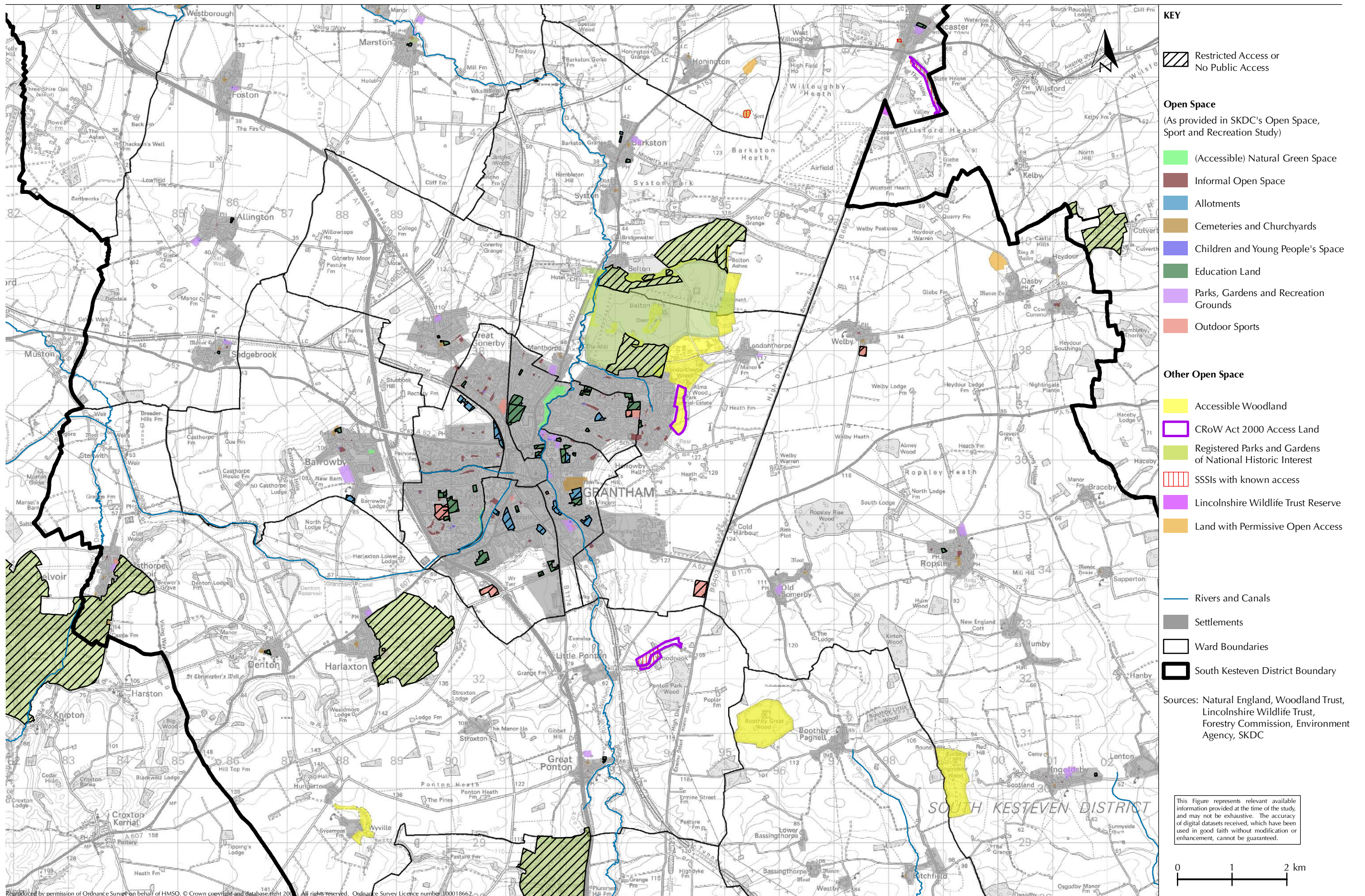
2.6.1 The following elements illustrate the broad range of open spaces which contribute to the green infrastructure network for Grantham (see **Figure 2.10a**). These are in both public and private ownership and have varying degrees of public accessibility - sites with either no public access or restricted access⁴⁹ are identified on **Figure 2.10a**. Only sites with open access to the general public have been included in this open space audit.

2.6.2 As described in **Section 1.0**, the Council has completed a district-wide Open Space, Sport and Recreation Study in accordance with the requirements of PPG17⁵⁰. This study identifies the type, quantity and, in very broad terms, quality of a range of open space sites; sets out standards for levels of provision; and assesses current deficiencies. The local standards for different types of open space set out in Grantham's Draft Area Action Plan policies are based

⁴⁸ Several of the Scheduled Monuments are within privately owned farmland

⁴⁹ Sites which do not fall within Natural England's definition of accessible greenspace, as stated in their 2010 '*Nature Nearby - Accessible Natural Greenspace Guidance*', have been identified as having no public access or restricted access. Natural England's definition states that '*accessible greenspace are places that are available for the general public to use free of charge and without time restrictions (although some sites may be closed to the public overnight and there may be fees for parking a vehicle)*'. For the purposes of this Study, this definition has been extended to include land that may be closed regularly for management purposes (such as Belton Park).

⁵⁰ A Study of Open Space, Sport and Recreation in South Kesteven District (2009).



on the Council's Open Space, Sport and Recreation Study. Each standard is to be applied both as a basis for contribution from new housing, and also as a minimum target for provision across the District. These standards have been used in assessing the accessibility and quantity of each relevant open space type considered below.

Accessible Natural Greenspace

2.6.3 For the purpose of this Study, accessible natural greenspace refers to natural greenspace⁵¹ that is normally available for public access⁵² on foot, providing opportunities for open access⁵³ for informal recreational activities. Accessible natural greenspace sites have been identified within settlements (as per the Council's Open Space, Sport and Recreation Study) and in the wider countryside. The latter include:

- Accessible woodlands;
- CROW Act 2000 Access Land;
- Parts of registered parks and gardens of national historic interest;
- SSSIs with known access;
- Lincolnshire Wildlife Trust Reserves with known access; and
- Land with permissive open access.

2.6.4 Altogether, there is c.623ha of accessible natural greenspace across the Study Area (concentrated in an area abutting Grantham's north-east fringe), c.11ha of which is located in Grantham itself. Approximately 335ha of accessible natural greenspace is contained within Belton Park and c.75ha in the immediately adjacent Alma/Londonthorpe Park and Wood. There are few other accessible natural greenspace sites and these are generally not easily accessible from Grantham.

2.6.5 The Council's Open Space, Sport and Recreation Study sets out a minimum quantity standard of 2ha of informal and natural greenspace (combined) per 1000 population with an associated access standard of 480m⁵⁴ (c. 10 minutes walking time). The Grantham urban area includes c.28ha of informal and accessible natural greenspace (combined) which equates to c.0.62ha per 1000 population. This ratio is lower than the minimum standard. In relation to the associated access standard of 480m, residents in the centre and in the south-east of Grantham

⁵¹ For the purpose of this Study, natural greenspace is defined as '*places where human control and activities are not intensive so that a feeling of naturalness is allowed to predominate*' (as defined by Natural England in their 2010 '*Nature Nearby - Accessible Natural Greenspace Guidance*').

⁵² Whether a natural greenspace is accessible or not was considered against Natural England's definition of accessible greenspace.

⁵³ Open access may be provided to the public either under statutory provision (e.g. under the Countryside and Rights of Ways Act), dedication by public landowners (e.g. by local authorities) or via voluntary access agreements with private landowners (e.g. under Environmental Stewardship agreements). The permanence of these access arrangements varies from permanent rights of access secured through legislation, to temporary access secured through voluntary arrangements.

⁵⁴ The Council's Open Space, Sport and Recreation Study states that the access standard is 480m (c.10 minutes walk) and that for larger 'strategic' sites, the same travel time by motorised trip mode may be acceptable in some circumstances.

lack easy access to informal/accessible natural greenspace. The sites which residents have access to are generally very small (below 1ha).

2.6.6 SKDC's Open Space, Sport and Recreation Study highlights that throughout the District *'informal and natural green space tends to be quite well maintained in the main, but is largely unimaginative in the way that it has been designed and laid out. Much of the space offers little more than mown grass with limited tree coverage. Occasionally, there is provision of seating and litter bins. The least imaginative space within this category tends to be in housing estates. The most glaring omission is a lack of tree planting, presumably in order to make maintenance cheaper and easier.'*

2.6.7 As well as assessing accessible natural greenspace deficiency and needs in relation to the standard set out in The Council's Open Space, Sport and Recreation Study, deficiency and needs have also been assessed in relation to the Access to Natural Greenspace Standard (ANGSt)⁵⁵ promoted by Natural England (see **Appendix D** for details). The Open Space, Sport and Recreation Study purely deals with accessible natural greenspace located within settlements and, unlike ANGSt, does not take into account the contribution of sites in the wider countryside (e.g. Alma/Londonthorpe Park and Wood or parts of the Belton estate) to levels of provision for both urban and rural communities. ANGSt, originally developed by English Nature and now promoted by Natural England, provides an important tool in assessing current levels of accessible natural greenspace and planning for better provision. The standard emphasises the importance for people of being able to have easy access to natural (and semi-natural) green space close to where they live.

Informal Open Space

2.6.8 The Council's Open Space, Sport and Recreation Study has identified c.24.9ha of informal open spaces across the Study Area, c.17.5ha of which is located within Grantham itself. Informal open spaces are scattered across Grantham but are generally small (under 2ha in size).

2.6.9 The standard for informal open space is combined with that for accessible natural greenspace and is discussed above.

Allotments

2.6.10 The Council's Open Space, Sport and Recreation Study has identified c.25.5ha of allotments across the Study Area, c.23.4ha of which is located in Grantham itself. For the Grantham urban area, this equates to 0.52ha of allotments per 1000 population. This ratio is higher than

⁵⁵ Natural England. (2010) Nature Nearby: Accessible Natural Greenspace Guidance.

minimum quantity standard of 0.2ha of allotments per 1000 population⁵⁶. In relation to the associated access standard of 480m (c. 10 minutes walking time), residents in Belmont, Earlesfield, Green Hill, parts of Greyfriars and St. Wulfram's lack easy access to existing allotments. Consultation has revealed that a number of allotments are under threat. For example, half of the Barrowby Road Allotments are overgrown and no longer in use as allotments and the California Gardens Allotments plot holders have moved off the site. It should be noted that public access to existing allotments is restricted. Some villages, e.g. Londonthorpe do not have allotments.

- 2.6.11 The Council's Open Space, Sport and Recreation Study describes how *'within the Grantham urban area the pattern of provision for allotments is dominated by private provision.'* It also highlights that *'allotments throughout the District appear to be under a high level of cultivation. This is also the case within the Grantham urban area where the level of provision is high. The active cultivation of allotments has historically fluctuated. At this time it is likely, for reasons described elsewhere in the report, that demand will grow - probably substantially.'*

Cemeteries and Churchyards

- 2.6.12 The Council's Open Space, Sport and Recreation Study has identified c.19.5ha of cemeteries and churchyards across the Study Area, c.8.5ha of which is located in Grantham itself. The Study does not provide a minimum quantity/access standard for cemeteries and churchyards.

Children and Young People's Space

- 2.6.13 The Council's Open Space, Sport and Recreation Study has identified 2.7ha of children and young people's space across the Study Area, c.1.8ha of which is located in Grantham itself. For the Grantham urban area, this equates to 0.04ha per 1000 population. This ratio is lower than the minimum quantity standard of 0.30ha⁵⁷ of children and young people's equipped space per 1000⁵⁸ population. In relation to the associated access standard of 480m (c.10 minutes walking time, but with variations for children and teenagers) large parts of Grantham including Belmont, Green Hill, parts of Greyfriars, and St. Wulfram's lack easy access to children and young people's equipped space. SKDC's Open space Sport and Recreation study highlights that there is *'a generally good quality of provision within Grantham itself for pre-teens which is well maintained'* but that *'much of the provision across the District is conventional in nature, and there are few examples of sites being dedicated for natural play for den making, tree climbing and other forms of more imaginative and adventurous play.'* Some villages, e.g. Harlaxton,

⁵⁶ As set out in the Council's Open Space, Sport and Recreation Study.

⁵⁷ This standard combines the need for a minimum of 0.15ha of children's equipped space and a minimum of 0.15ha of young people's equipped space per 1000 population

⁵⁸ As set out in the Council's Open Space, Sport and Recreation Study.

have no children and young people's equipped space and/or facilities are in a poor state of repair.

Education Land

- 2.6.14 The Council's Open Space, Sport and Recreation Study has identified c.46.9ha of education land across the Study Area, c.41ha of which is located within Grantham itself. The Study does not provide a minimum quantity/access standard for education land. It however highlights that *'school based open space and recreation provision exists primarily to meet educational needs. It also has the potential to be used by the wider community where there is a policy or practice promoting such dual use. School based provision offers scope for helping to meet local needs for playing pitches and built facilities in particular, where there might otherwise be local shortages. It can also help to improve access to opportunities in rural areas remote from venues in the larger settlements'*.

Outdoor Sports

- 2.6.15 The Council's Open Space, Sport and Recreation Study has identified c.27.4ha of outdoor sports space (including outdoor sports with limited access) across the Study Area, of which c.17.5ha is located in Grantham itself. For the Grantham urban area, this equates to 0.39ha per 1000 population. This ratio is much lower than the minimum quantity standard of 1ha of outdoor sports space per 1000 population⁵⁹. However, the ratio does not include provision either on education land or in parks, gardens and recreation grounds. In relation to the associated access standard of 480m (c.10 minutes walking time), areas including Green Hill and parts of Greyfriars lack easy access.

Parks, Gardens and Recreation Grounds

- 2.6.16 The Council's Open Space, Sport and Recreation Study has identified c.40.8ha of parks, gardens and recreation grounds across the Study Area, c.9.9ha of which is located in Grantham itself. For the Grantham urban area, this equates to 0.22ha of parks, gardens and recreation grounds per 1000 population. This ration is only slightly lower than the minimum quantity standard of 0.30ha of parks, gardens and recreation grounds per 1000 population⁶⁰. In relation to the associated access standard of 480m (c.10 minutes walking time), large parts of Grantham including Belmont, Earlesfield, Green Hill, and parts of Greyfriars lack easy access to parks, gardens and recreation grounds. The Council's Open Space, Sport and Recreation Study

⁵⁹ As set out in the Council's Open Space, Sport and Recreation Study.

⁶⁰ As set out in the Council's Open Space, Sport and Recreation Study.

highlights that *'within Grantham those parks, gardens and recreation grounds that do exist tend to be well maintained and have a good specification of equipment.'*

- 2.6.17 Four registered parks and gardens of national historic interest (not identified as part of SKDC's Open Space, Sport and Recreation Study) fall partly or wholly within the Study Area – these include Belton House and Park (which abuts Grantham's urban area to its north-east), Belvoir Castle and Park (which abuts Woolsthorpe by Belvoir to its west), Harlaxton Manor (which abuts Harlaxton to its west) and Stoke Rochford (which abuts Stoke Rochford to its north). Together, they cover c.1325ha of land. Access to all four properties is restricted, with the exception of c.335ha of parkland within Belton House and Park (which also falls under accessible natural greenspace).

Open Space Sites - Grantham

- 2.6.18 Sites over 1ha, located in Grantham's urban area or its immediate surroundings, are listed in **Table 5** in **Appendix A** and are identified by number on **Figure 2.10b**. For a number of sites, SKDC's Open Space, Sport and Recreation Study has identified a scoring of each site's 'potential' to improve in relation to its existing function, resulting in a 'gap' score⁶¹ (i.e. the difference between the overall 'quality'⁶² and 'potential'⁶³ scores). This information is provided in the table below (quality, potential and gap given respectively).

Key Needs and Opportunities⁶⁴

- 2.6.19 Key needs and opportunities for safeguarding and enhancing these elements/functions as part of Grantham's green infrastructure network are listed below. Needs for Grantham are based on the town having an existing population of 45,000 and an anticipated future population of 60,000 by 2026⁶⁵:

Key Needs

- **Informal and accessible natural greenspace⁶⁶**: current gap in provision of at least 62ha (c.1.38ha/1000 population) to meet the needs of Grantham's existing population. Additionally, a minimum of 30ha will need to be provided by 2026 to meet the needs of the future population. Residents in the centre and in the south-east of Grantham currently do not have access to informal/accessible natural greenspace within 480m of their homes. The

⁶¹ Gap score: when the Quality score is subtracted from the Potential score this will give an indication of the perceived net scope for improvement within the sites current use. The final gap score for each site can be used as a tool in helping prioritise between sites in relation to new investment. However, as the Gap score only relates to current use, its utility in helping to determine investment priorities will be limited where a change of use to a different open space function is being considered

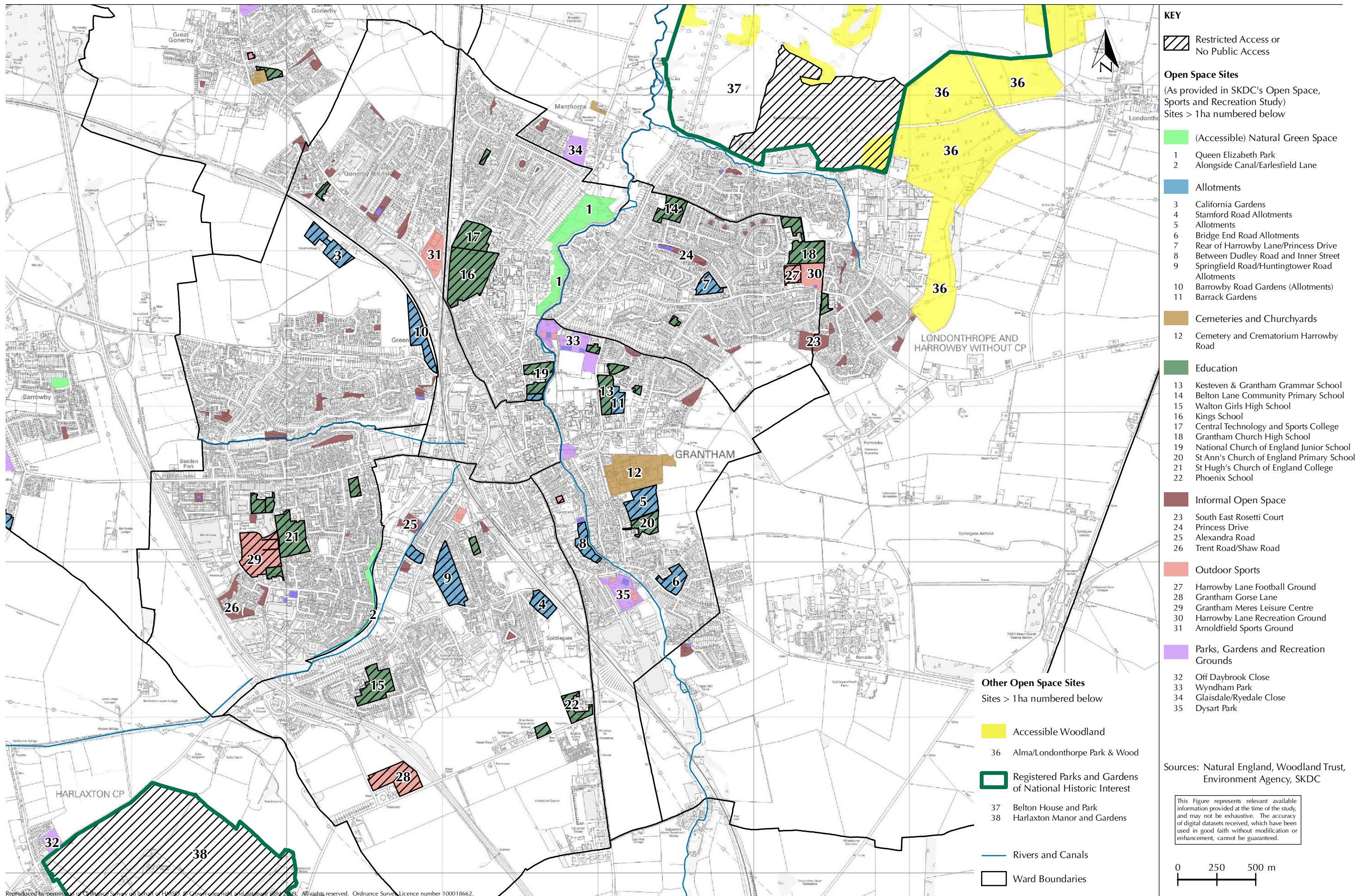
⁶² Quality score: based on a score from 1 to 5 with 1 being 'Poor' and 5 being 'Excellent'.

⁶³ Potential score : the considered view of the assessor as to what extent the site is capable of improvement within its current use. The maximum range was again 1 to 5

⁶⁴ Needs and opportunities have been identified by CBA unless otherwise specified.

⁶⁵ Population figures taken from SKDC's Local Development Framework – Core Strategy (Adopted July 2010).

⁶⁶ In relation to the standard set out in the Council's Open Space, Sport and Recreation Study.



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GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.10b
Open Space Sites - Grantham

Council's Open Space, Sport and Recreation Study identifies that Trent Road/Shaw Road informal open space requires cleaning up;

- **Accessible natural greenspace⁶⁷**
 - Deficiency of an accessible natural greenspace of at least 2ha in size, no more than 300 metres from home, for most of Grantham's residents and most residents in rural settlements;
 - Deficiency of at least one accessible 20ha site, within two kilometres of home, for approximately two thirds of Grantham's residents and most residents in rural settlements;
 - Deficiency of at least one accessible 100ha site, within five kilometres of home, for most residents in rural settlements;
 - Deficiency of at least one accessible 500ha site, within ten kilometres of home, for all of Grantham's residents and all residents in rural settlements; and
 - There are currently no statutory Local Nature Reserves in the Study Area. There is therefore a deficiency of at least 63ha;
 - Development in the North West and Southern Quadrant growth areas will need to consider accessible natural greenspace requirements (of different sizes at different distance thresholds);
- **Allotments⁶⁸**: review level of usage/demand for allotments. Where appropriate address current threats e.g. half of the Barrowby Road Allotments are overgrown and no longer in use as allotments. Residents in Belmont, Earlesfield, Green Hill, parts of Greyfriars, and St. Wulfram's do not currently have access to allotments within 480m of their homes;
- **Children and young people's equipped space⁶⁹**: current gap in provision of at least 11.7ha (0.26ha/1000 population) to meet the needs of Grantham's existing population. Additionally, a minimum of 4.5ha will need to be provided by 2026 to meet the needs of the future population. Residents in Belmont, Green Hill, parts of Greyfriars, and St. Wulfram's do not currently have access to children and young people's equipped space within 480m of their homes;
- **Outdoor sports (combined)⁷⁰**: current gap in provision of at least 27.4ha (0.61ha/1000 population) to meet the needs of Grantham's existing population. Additionally, a minimum of 15ha will need to be provided by 2026 to meet the needs of future population. Residents in Green Hill and parts of Greyfriars do not currently have access to outdoor sports space within 480m of their homes;
- **Parks, gardens and recreation grounds⁷¹**: current gap in provision of at least 3.6ha (0.08ha/1000 population) to meet the needs of Grantham's existing population. Additionally, a minimum of 4.5ha will need to be provided by 2026 to meet the needs of the future population. Residents in Belmont, Earlesfield, Green Hill, and parts of Greyfriars do not currently have access to parks, gardens and recreation grounds;
- **Common needs**: address quality issues relating to individual sites, in line with the findings of the Council's Open Space, Sport and Recreation Study. In addition to the enhancement and/or creation of open space sites in areas which are currently deficient, the improvement of access to existing green space should be a priority for future management.

⁶⁷ In relation to Natural England's Access to Natural Greenspace Standard (ANGSt)

⁶⁸ In relation to the standard set out in the Council's Open Space, Sport and Recreation Study.

⁶⁹ In relation to the standard set out in the Council's Open Space, Sport and Recreation Study.

⁷⁰ In relation to the standard set out in the Council's Open Space, Sport and Recreation Study.

⁷¹ In relation to the standard set out in the Council's Open Space, Sport and Recreation Study.

Key Opportunities

- As described in the Council's Open Space, Sport and Recreation Study, *'where it is likely to prove difficult to provide substantial areas of new natural space, opportunities to make some areas, e.g. informal open spaces, more natural should be examined. Collective improvement of informal spaces through imaginative and naturalistic planting could be the basis for creating green corridors within Grantham. Opportunities for creating more natural environments should also be examined in larger parks. Altogether, this would help towards meeting identified gaps in accessible natural greenspace provision'*;
- The Council's Open Space, Sport and Recreation Study does not propose standards for routeways and corridors but states that *'the standard for Informal Open Space and Accessible Natural Greenspace can be applied and interpreted flexibly to create or improve existing routes for walking, cycling and riding in both built up and rural areas'⁷². In rural and urban fringe locations contributions to the Informal Open Space and Accessible Natural Greenspace standard might be invested in helping to expand, and/or improve parts of the Rights of Way network. In built up areas, contributions might be used to improve links by foot and bike between important destinations such as work places, schools, shopping areas, parks, and leisure facilities. They might also be used to help improve access by foot and bike to the outlying Rights of Way network'*;
- Investigate scope for converting allotment land to another open space function where levels of usage/demand indicate that certain sites are surplus to requirement;
- As described in the Council's Open Space, Sport and Recreation Study, *'where outdoor sport spaces are not easily reached on foot, opportunities could be explored for providing informal sports opportunities (such as Multi-Use Game Areas) on existing informal spaces or parks. For more organised sport, the most obvious solution would be to explore further opportunities for dual use provision at local schools'*;
- Opportunities relating to the River Witham Corridor include:
 - Providing more seating and key focal points/destinations and accessible green spaces along the river corridor;
 - Providing open access to riverside pastures e.g. Sedgwick Meadows and pastures on the River's west bank to the south of Grantham;
 - Improving/enhancing the small recreation ground/children play area which provides a key open space to the west of the housing along Bridge End Grove and east of the railway corridor;
 - habitat creation, such as species rich grassland, scrub and trees in the eastern part of Wyndham Park
- Opportunities relating to the Grantham Canal Corridor include:
 - Provision of new/enhanced open spaces, including accessible natural greenspace sites, in areas adjoining canal and more seating;
 - To the north of Earlesfield Lane, mown grassland adjacent to the Grantham Boxing Club provides an open space amongst industrial buildings, however there is no access here to the canal or town centre in the north. This site would benefit from being enhanced;
 - Enhancing the mown amenity grass along the banks of the Canal;
 - The Grantham Canal Basin Vision and Appraisal⁷³ proposes that *'the Canal, along with Mow Beck (a small stream that flows to the rear of Alexander Road), will form the basis of a new open space and public realm network across the site. It will provide better east-*

⁷² For example one hectare of Informal Green Space is sufficient to create a route 10 metres wide and 1 kilometre long.

⁷³ The Grantham Canal Basin Vision and Appraisal - A Report for South Kesteven District Council and Lincolnshire County Council (2010).

west links across the site and improved connections to the town centre. The new open space network will also provide the opportunity for the creation of new ecological habitats and wildlife corridors.'

- Opportunities relating to the growth areas (North West and Southern Quadrants) include:
 - Buffering existing habitats by extending them through habitat creation. Such buffers would also strengthen landscape structure, provide screening and present potential opportunities for enhanced public access, as linear routes and/or open access areas;
 - Providing high quality open spaces to meet the needs of new communities and explore opportunities for new sites to contribute towards meeting identified gaps in provision for existing communities;
 - Ensuring new development is served by a range of open space sites of different scales/types;
 - Consultation with stakeholder identified an opportunity to include a 'village green' type open space in the Southern Quadrant;
- Consultation with stakeholders identified an opportunity to provide 'formalised' open access to the area known as Hills and Hollows (north-east of the Harrowby Road Cemetery and Crematorium). This would help towards meeting identified gaps in accessible natural greenspace provision;
- Consultation with stakeholders identified an opportunity to creating a green arc/series of linked green spaces or linear corridor between the area known as Hills and Hollows and Alma/Londonthorpe Park and Wood; and
- Providing a new accessible green space near Little Ponton, along the river footpath.

2.7 Access Links and Connectivity

Overview

2.7.1 Overall, the Study Area is served by a wide range of sustainable access links, including a number of strategic routes for walkers, cyclists and equestrians. The Viking Way and Danelaw Way, both long distance footpaths, run the entire length of the Study Area, whilst the Jubilee Way (also a long distance footpath) enters the Study Area for a short distance from the west. The East Midlands National Byway, a nationally promoted cycle route (which predominantly uses the existing road network), cuts north-south through the Study Area, passing through Grantham. National Cycle Route (NCR) 15 and NCR 64 converge on the western boundary of the District/County, just north of where the Jubilee Way and Viking Way also meet. Despite the extensive provision of strategic access links within the Study Area, the network of local access links between Grantham and the wider countryside is fragmented in places.

2.7.2 There are several local routes promoted for walkers, cyclists and equestrians. The majority take the form of circular routes which are not connected to the Grantham urban area. There are only two promoted equestrian routes in the area, reflecting the poorly connected and limited bridleway and restricted byway networks. The rest of the Public Rights of Way network varies

in its spatial distribution across the Study Area, with a notably higher density and better connected footpath network in the eastern half.

2.7.3 In terms of public transport, the villages and countryside surrounding Grantham are relatively well served from Monday to Saturday by a comprehensive network of regular bus services, most of which terminate at the town's bus station. Grantham's train station and Pedal Park (designated cycle parking facility) are located a short distance away from the bus station. There is one other train station in the Study Area, Ancaster, located in the far north east of the Study Area. A limited service is in operation between Grantham and Ancaster on the historic Poacher Line from Nottingham to Skegness. Connectivity between the public transport network and linear and circular access routes in the wider area, is actively promoted by Lincolnshire County Council (LCC).

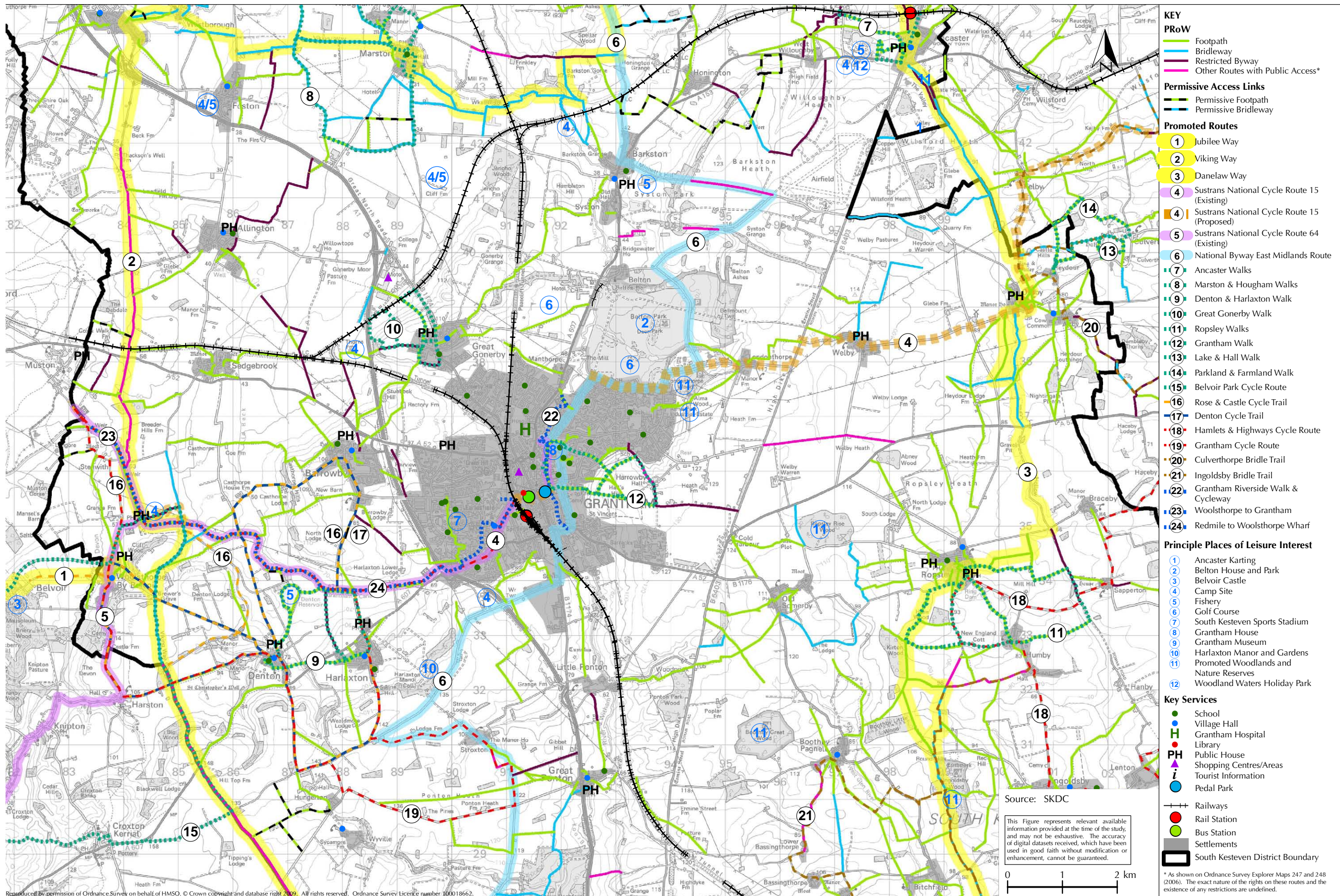
2.7.4 Connectivity between the urban edges of Grantham and the wider countryside (including the surrounding villages) is currently limited for non-motorised users. Grantham's south west urban edge is the best served as cyclists and pedestrians are able to make use of NCR 15 as a gateway to the countryside.

2.7.5 For the purposes of this study, key access links have been categorised as follows:

- Strategic Footpaths;
- Local Footpaths;
- Strategic Cycleways;
- Local Cycleways;
- Local Bridleways;
- Byways;
- Riverways – access along the waterway (pedestrian/cycle access); and
- Public Transport Routes.

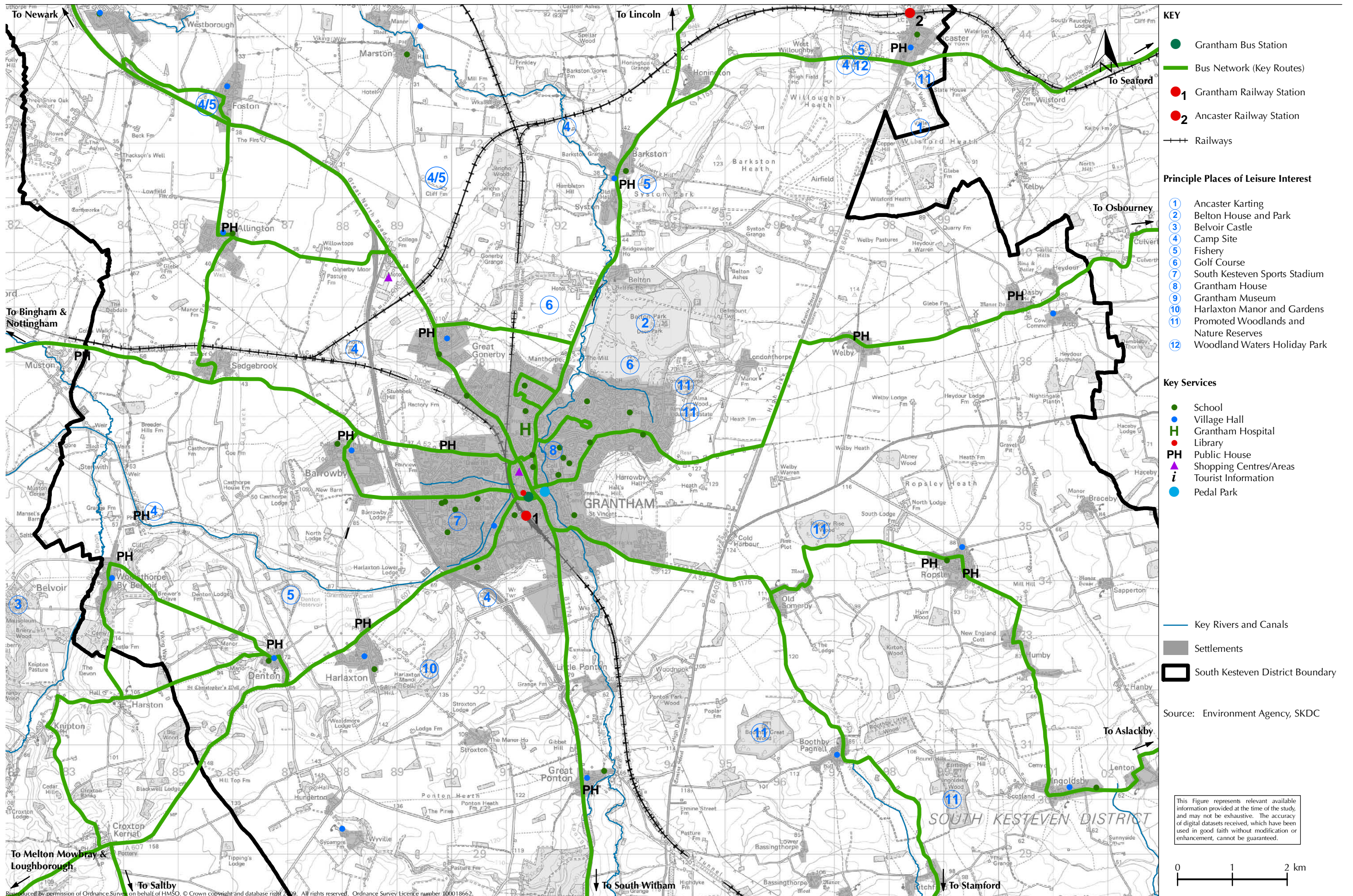
Key Access Links and Connectivity (see **Figure 2.11a** and **2.11b**)

2.7.6 Key access links, public transport routes and destinations across the Study Areas are illustrated on **Figure 2.11a** and respectively listed in **Table 6, 7** and **8** in **Appendix A**. **Figure 2.11b** illustrates transport network and services operating in and out of Grantham



GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.11a
Access Links and Connectivity



GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.11b
 Access Links and Connectivity -
 Public Transport Network

Key Needs and Opportunities⁷⁴

Grantham Urban Area

2.7.7 A number of strategies and plans identify needs/opportunities relating to the movement of pedestrians, cyclists and users of public transport in and around Grantham's urban area. In terms of the town's local cycleway and footpath networks, needs/opportunities fall within the following general themes: i) upgrading existing routes, ii) provision of new routes, iii) incorporation of new routes into proposed development and, iv) improved signage and crossings. Key needs and opportunities for safeguarding and enhancing access links and connectivity in the Grantham urban area are listed below:

- Increase the provision of dedicated cycleways along arterial road corridors to and from Grantham town centre, including⁷⁵: the A607 north towards Belton (improving linear access to Belton Park and House), the A52 south-east towards Old Somerby, the B1174 south towards Little Ponton (priority to improve provision along the short section used by the national byway between the junctions with Albert Street and Gorse Lane), and along the fast moving Dysart Road west towards Barrowby, providing a safe crossing over the A1 and local cycle link to the Grantham Canal Cycleway (NCR 15);
- Extend the following existing dedicated cycleways along arterial road corridors⁷⁶: Belton Lane north east to Londonthorpe (improving provision for cyclists along this fast moving section of the national byway and linear access to Londonthorpe Wood, Alma Wood, Belton House & Park) and Gonerby Road north west to Great Gonerby (this will require land acquisition);
- Increase the provision of dedicated cycleways in the town centre, most crucially along the busy Wharf Road and St Catherine's Road. This is necessary to provide vital, safe cycle access to the Bus Station and Pedal Park, but also to complete a dedicated cycleway route along urban highway corridors between the off-road Riverside Cycleway in Grantham town centre and the off-road Grantham Canal Cycleway west of the A1 (consequently such provision would also complete a proposed section of NCR 15)⁷⁷;
- The Draft Grantham Walking and Cycling Strategy (2010) identifies an urgent need for a pedestrian and cycle crossing at the junction between Springfield Road and Harlaxton Road;
- The Draft Grantham Movement Strategy (2010) identifies an opportunity to incorporate a dedicated cycleway and key footpath link between Gonerby Road and Barrowby Road as part of the proposals for the North West Sustainable Urban extension. There should also be links made with existing footpaths to the west of this area, to provide new connections between the wider countryside and Grantham;
- Opportunity to incorporate a dedicated off-road cycleway and footpath along the River Witham to the South of Grantham, running through the Southern Quadrant growth area;
- The Draft Grantham Movement Strategy (2010) identifies the need to ensure that permeability for pedestrians and cyclists is incorporated into the East-West relief road proposals, so this does not become an additional barrier to the urban population accessing countryside south of Grantham;

⁷⁴ Needs and opportunities have been identified by CBA unless otherwise specified.

⁷⁵ Opportunities identified in the Draft Grantham Walking and Cycling Strategy (2010) and by CBA.

⁷⁶ Opportunities identified in the Draft Grantham Walking and Cycling Strategy (2010) and by CBA

⁷⁷ Opportunities identified in the Draft Grantham Walking and Cycling Strategy (2010), Grantham Canal Strategy (date unknown) and Sustrans.

- Aspirational cycleway and footpath routes should be incorporated into development proposals for the Canal Regeneration Area⁷⁸ to increase permeability between arterial roads and, from a strategic perspective, form new routes which increase connectivity between Grantham town centre and the Grantham Canal;
- The existing off-road cycleway south west to Harlaxton, along the A607, is too narrow and it is recommended that this designation is removed;
- The Grantham Transport Strategy (2007-12) recognises that very few of the town's bus services stop at Grantham train station, which presents an opportunity to create a more integrated public transport network. Whilst it will not be possible for all bus services in Grantham to serve the rail station, certain bus routes could be extended so that they stop at there as well as the bus station⁷⁹;
- The Draft Grantham Movement Study (2010) proposes that new bus routes serve the Sustainable Urban Extensions and that where existing routes can easily accommodate a small diversion to provide a service to these proposed new communities, this should be achieved; and
- As noted in the Grantham Transport Strategy (2007-12), most of the bus services in Grantham are commercial operations and there is a limit to the influence Lincolnshire County Council can have on them, or how much funding is available to run additional services that may be required. This may restrict the above two opportunities

The Wider Study Area

2.7.8 Key needs and opportunities for safeguarding and enhancing access links and connectivity in the Study Area as a whole are listed below:

- The urban population of Grantham cannot safely access areas of nearby countryside which offer abundant walking opportunities (such as Ancaster, Oasby, Ropsley, Ingoldsby and Marston) on foot. This is due to strategic gaps in the local footpath network and barriers to movement imposed by major infrastructure, notably the A1, B6403, A52 and railway lines. There is a general, strategic need to develop a more comprehensive local footpath network across the Study Area. Increasing the density of footpaths over large expanses of land north, north-west (beyond Greater Gonerby), north-east and south of Grantham will be important not only to open up the immediate countryside to the population, but also to establish vital connectivity from Grantham to the wider hinterlands, on foot. There is a further need to overcome the aforementioned infrastructural barriers. Priority opportunities include access to the better connected eastern half of the Study Area and the creation of routes which safely cross the B6403, the A52 and the rail line south of Grantham;
- In light of the general need to increase the number and connectivity of access routes in areas of countryside around Grantham, two specific opportunities are identified:
 - Development of a linear multi-user off-road access route along the course of the River Witham. This could extend the town's existing concept of the Riverside Walk into the countryside both north and south of the town and provide a strategic link between the Viking Way in the north (requiring a safe crossing of the A607) and visitor destinations to the south of the Study Area, including Stoke Rochford Hall, the Manor House and Twyford Wood at Woolsthorpe-by-Colsterworth. To the south this route would incorporate Dysart Park and provide a greenway through the proposed Southern Sustainable Urban Extension; and

⁷⁸ Opportunities identified in the Draft Grantham Walking and Cycling Strategy (2010), Grantham Canal Strategy (date unknown) and the Draft Grantham Movement Strategy (2010).

⁷⁹ This opportunity is identified in the Grantham Transport Strategy (LCC, 2007), which notes some changes to the road layout would be required in front of the rail station.

- An off-road footpath route heading east from Grantham and linking with the Danelaw Way, including a safe crossing point over the B6403;
- The following needs/opportunities relating to locally promoted routes have been identified:
 - General need to promote more cycling and walking routes which link up to the Grantham urban area;
 - Provision of a new route promoted under the 'Lincolnshire Railway Walks' initiative between Ancaster and Grantham railway stations. It could incorporate either the newly proposed River Witham corridor route or the newly proposed eastbound footpath linking with the Danelaw Way;
 - Provision of a new promoted equestrian route utilising the bridleways around Barkston and Marston; and
 - Devise and implement an initiative to improve the safety of busy and dangerous road junctions and crossings on the promoted rural cycle network, as identified in the Grantham and Sleaford Cycling Map (LCC, 2010). A priority for improvement will be the crossing of the A1 at Foston.
- The bridleway and restricted byway networks are severely fragmented in the Study Area, limiting opportunities for off-road cycling and horse riding. As a result, there is a relatively high dependency on roads to form part of local cycling and horse riding routes. Opportunities to bridge gaps in the existing network should be identified, for example, north of Welby and suitable opportunities for equestrians and cyclists to safely cross main roads, for example, the A1 east of Foston, should be sought;
- In addition to formalising and completing the proposed town centre section of NCR 15 (identified above) there is a need to develop the proposed section heading north east from the town. This will complete the north-south, east-west dissection of the Study Area by nationally significant cycle routes and eventually provide a strategic link between Grantham and NCR 1;
- Improve the quality, signage and accessibility of NCR 15 along the Canal towpath, particularly in terms of making it wholly DDA compliant;
- Illegal use by motorbikes has caused a section of the Viking Way at Longmoor Lane near Woolsthorpe to become unusable during bad weather;
- There is a need to improve the safety of the byway route along the busy Gorse Lane section, as identified by the Grantham and Sleaford Area Cycling Map (LCC, 2010);
- The quality of signing, waymaking and maintenance of individual public rights of way should be audited at a Study Area scale, priorities identified and improvements made, in order to encourage greater use of the network;
- The following issues and opportunities exist in relation to public transport in the wider Study Area:
 - Frequency of services between Grantham and Ancaster rail stations on the historic Grantham-Skegness line should be increased including the operation of a Sunday service, and journeys between these stations more widely promoted from an 'accessing the countryside' perspective. LCC has expressly identified this as an issue and is fully supportive of this line, stating that investment should be pursued in it wherever possible;
 - At present, the above rail route can only accommodate two cycles per train without booking; where there is capacity, this number should be increased; and
 - While a comprehensive bus network is in place, which, on the whole operates regular services across the Study Area from Monday to Saturday, there is an opportunity to extend these services to include Sunday.

2.8 Socio-Economic Conditions

- 2.8.1 The socio-economic conditions within the Study Area are illustrated on **Figures 2.12-2.16** and outlined below. Data shown on **Figure 2.12** is displayed by ward whilst data shown on **Figures 2.13-2.16** is displayed by Super Output Area (SOA).

Population Density (Figure 2.12)

- 2.8.2 Grantham, the largest town in south west Lincolnshire, sits in the centre of the Study Area. In 2007, it had a population estimated at just over of 45,000 and a travel to work population rising to over 60,000⁸⁰. A number of rural settlements including South Kesteven's District's largest village, Great Gonerby (which has a population of c.2050), are interspersed across the Study Area. The predominantly rural nature of the wider area around Grantham means that population densities outside of Grantham are generally low throughout (under 318 people per km²). The proposed population growth target for Grantham is to reach 48,000 by 2016 and 60,000 by 2026 with an increase of 4,700 new jobs⁸¹, which means that population density in Grantham, which is already higher than elsewhere within the Study Area will become even higher. The most densely populated areas of Grantham (with over 2950 people per km²) include parts of Earlesfield and the Harrowby Estate.

Health Deprivation (Figure 2.13)

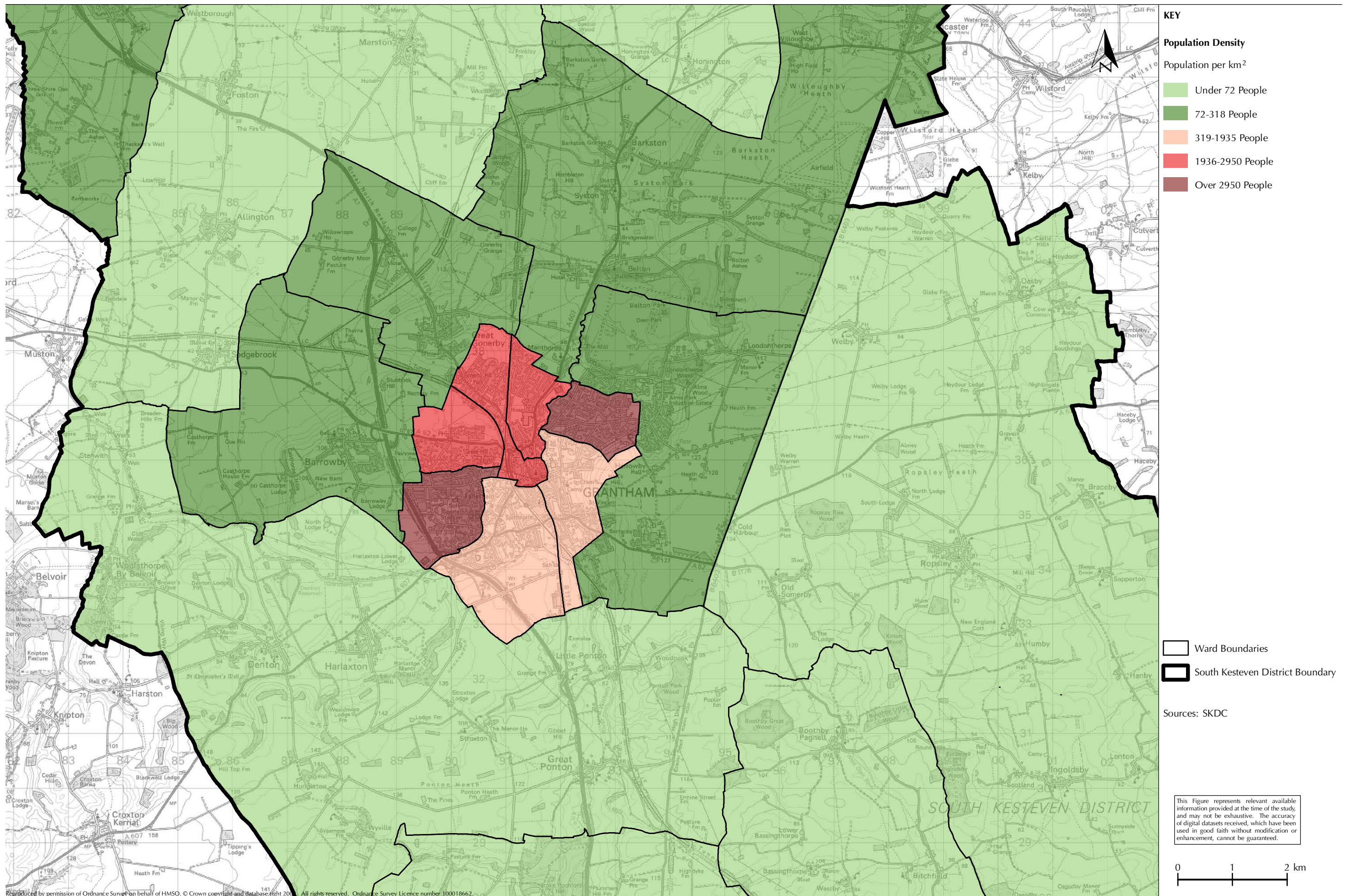
- 2.8.3 There are pockets of relatively high health deprivation within the Grantham urban area in comparison to the wider area. One SOA in the Earlesfield ward falls within the 20% most deprived communities nationally in relation to health deprivation. Two other SOAs in the Earlesfield ward and two in the Harrowby ward fall within the 20-40% most deprived.

Income Deprivation (Figure 2.14)

- 2.8.4 There are pockets of relatively high income deprivation within the Grantham urban area in comparison to the wider area. Three SOAs in the Earlesfield ward and one in Harrowby ward fall within the 20% most deprived communities nationally in relation to income deprivation. Two SOAs in the Earlesfield ward, and one in each the Grantham St Johns, Harrowby, St Anne's and St Wulfram's, wards fall within the 20-40% most deprived.

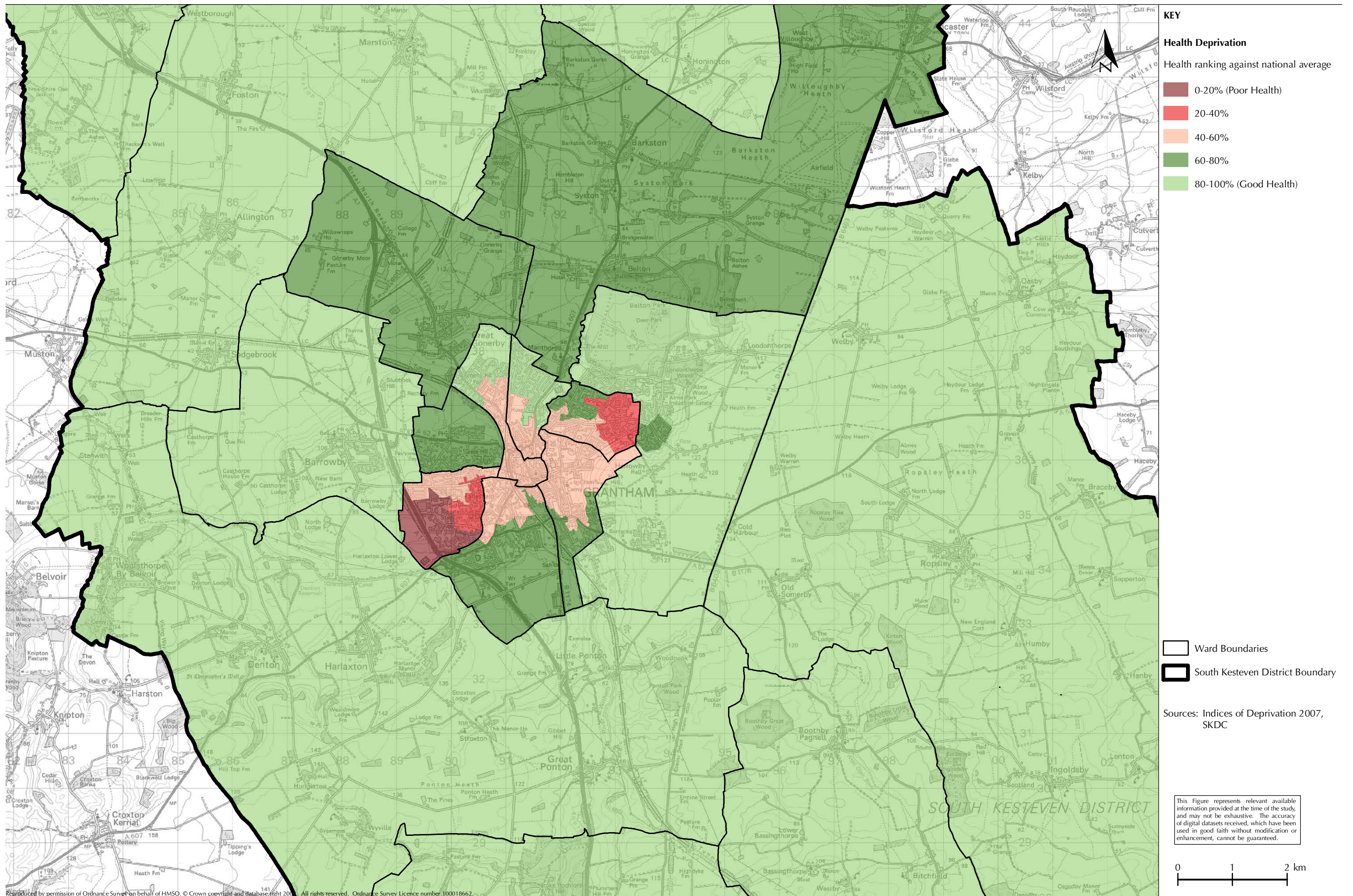
⁸⁰ Information from the Local Development Framework for South Kesteven – Core Strategy (Adopted July 2010).

⁸¹ The Grantham Canal Basin Vision and Appraisal - A Report for South Kesteven District Council and Lincolnshire County Council (2010).



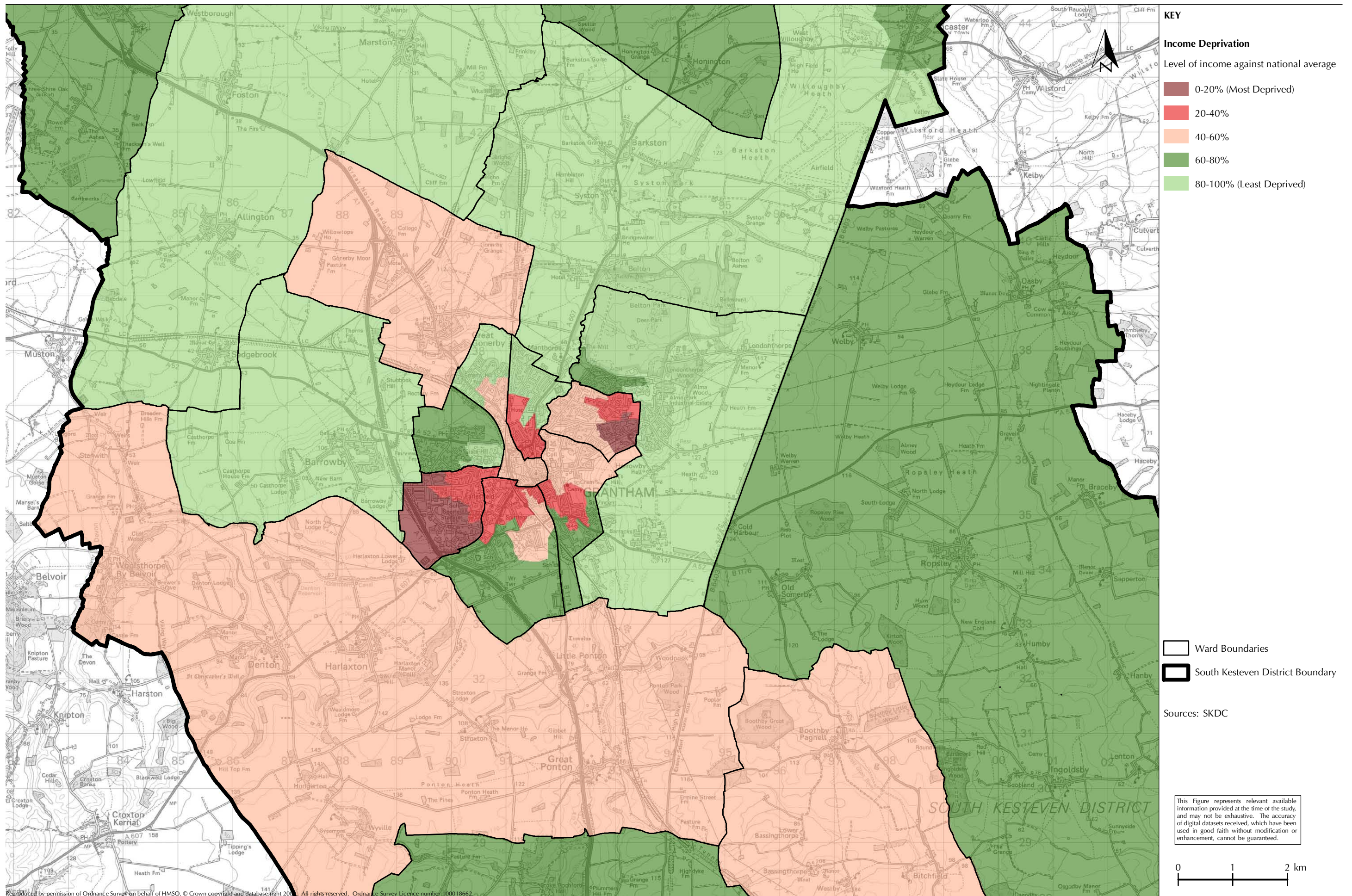
GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.12
Socio Economic - Population Density



GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.13
Socio Economic - Health Deprivation



GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.14
Socio Economic - Income Deprivation

Living Environment (Figure 2.15)

2.8.5 There are pockets of relatively high living environment deprivation within the Grantham urban area in comparison to the wider area. Two SOAs in the Grantham St Johns ward and one in each the St Annes and St Wulfram's wards fall within the 20% most deprived communities nationally in relation to living environment deprivation. Two SOAs in the St Annes ward fall within the 20-40% most deprived.

Indices of Multiple Deprivation (Figure 2.16)

2.8.6 SKDC is not considered to be a deprived local authority as it ranked 271 out of 354 English local authorities, according to the 2007 Index of Multiple Deprivation⁸² (with 1 being the most deprived). However, there are pockets of relatively high deprivation within Grantham, in comparison to the surrounding area. The most severe of these being the Earlesfield estate, which is ranked amongst the 10% most deprived communities nationally⁸³. Two SOAs in each the Earlesfield, Grantham St Johns, and Harrowby wards as well as one SOA in each the St Anne's and St Wulfram's wards fall within the 20-40% most deprived.

2.8.7 In summary, the spatial priorities for investment in green infrastructure provision to address socio-economic needs include areas in or close to:

- Communities in the north of Grantham;
- Communities in the north-west of Grantham (Harrowby estate);
- Communities in the centre of Grantham; and
- Communities in the south-west of Grantham (Earlesfield estate).

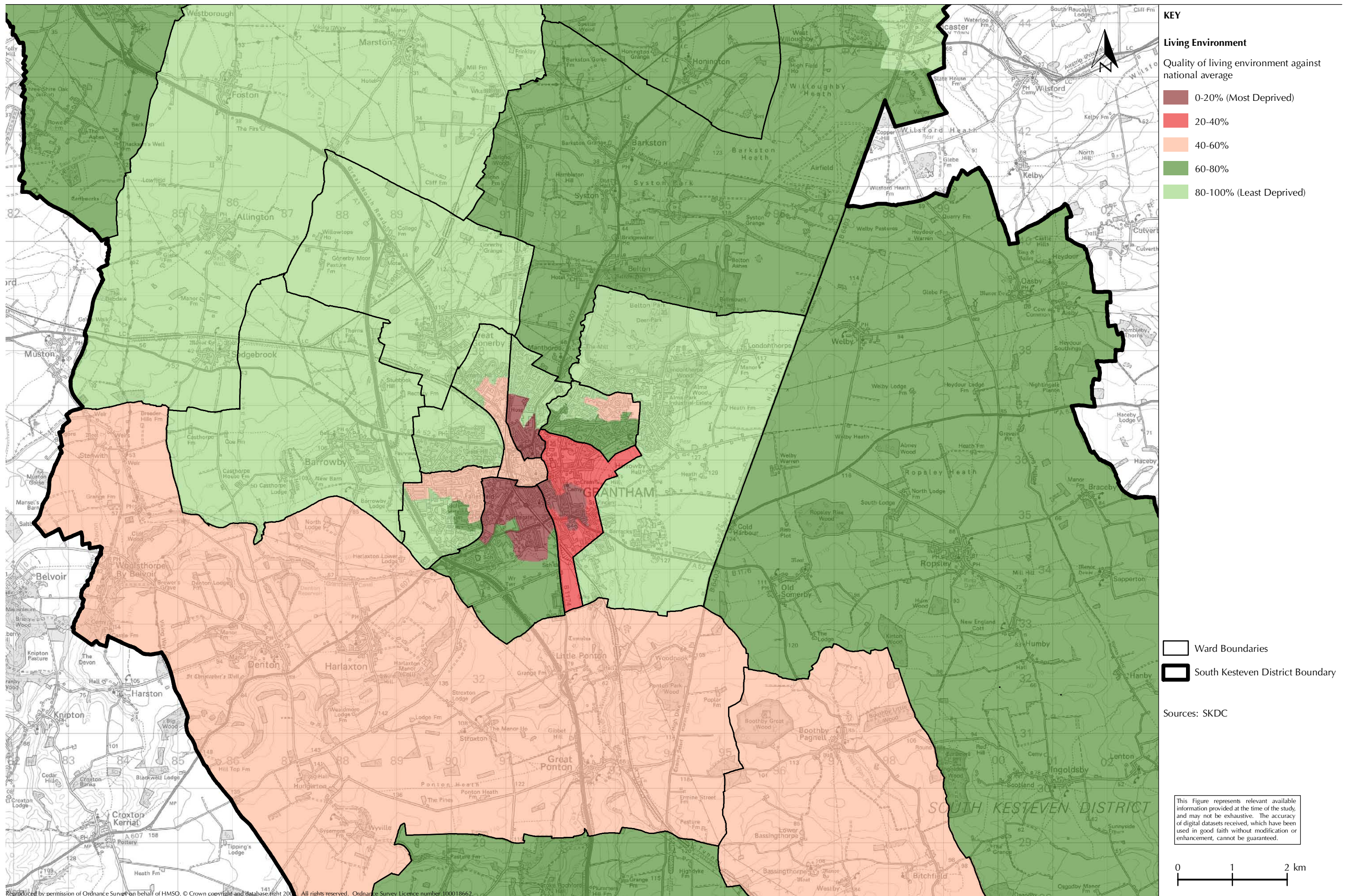
Proposed Major Development/Regeneration Areas (Figure 2.17)

2.8.8 **North West Quadrant Growth Area:** a Sustainable Urban Extension is proposed to the north west of Grantham, which has the potential to provide up to 3,500 dwellings, as well as some additional education and community facilities. Outline planning consent for the 'Poplar Farm' development part of the Quadrant has been secured (subject to completion of a Section 106 Agreement), which proposes a development of 1,800 dwellings, a local centre, a school, open spaces and a link road.

2.8.9 **Southern Quadrant Growth Area:** a Sustainable Urban Extension is proposed to the south of Grantham, which offers the potential for new mixed use residential and employment development, with integrated community and educational facilities. The overall development is likely to provide up to 4,000 new homes which will be delivered alongside new local shops,

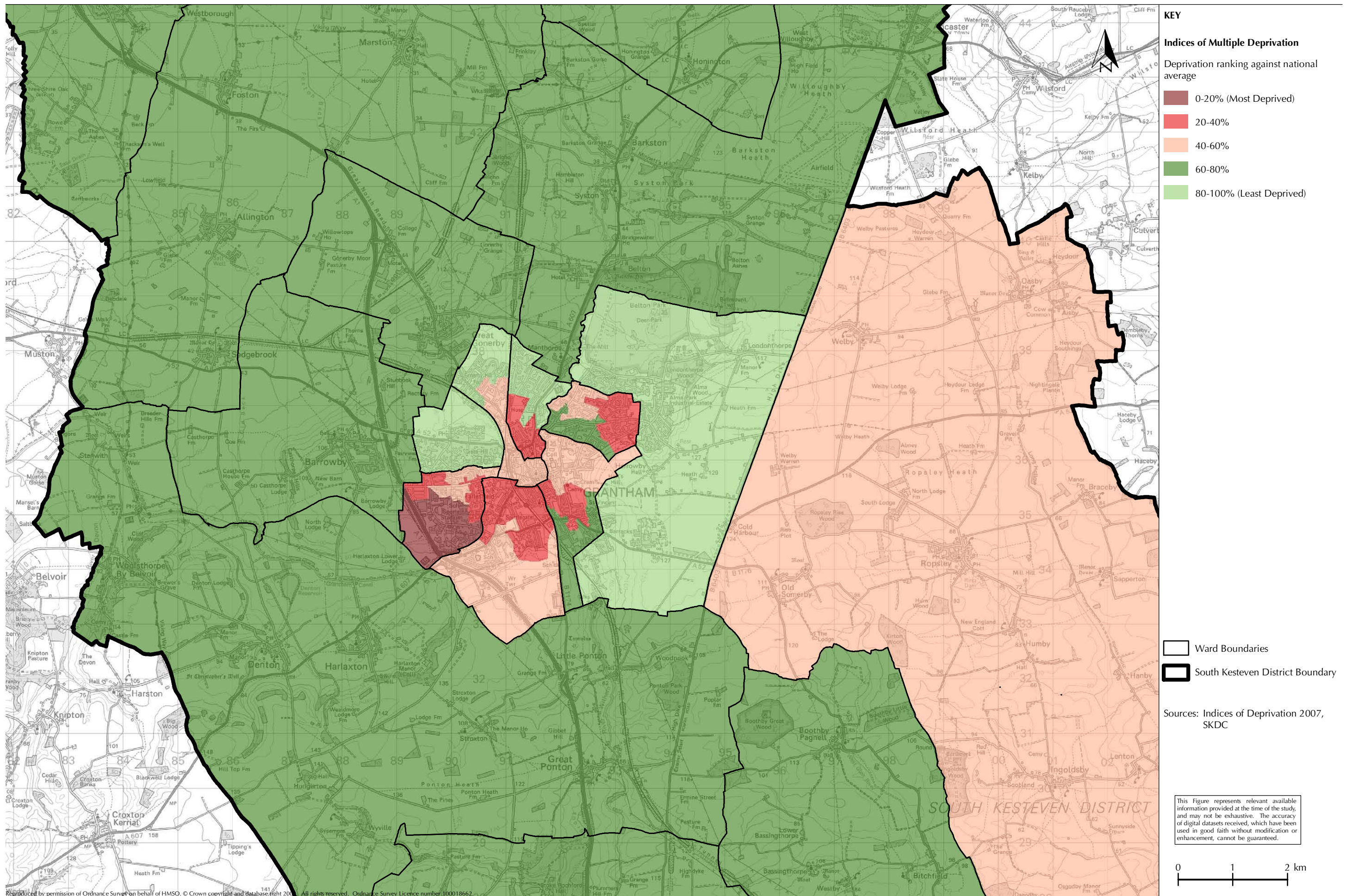
⁸² Information from the Office for National Statistics(data dated January 2007).

⁸³ Information from the Local Development Framework for South Kesteven – Core Strategy (Adopted July 2010).



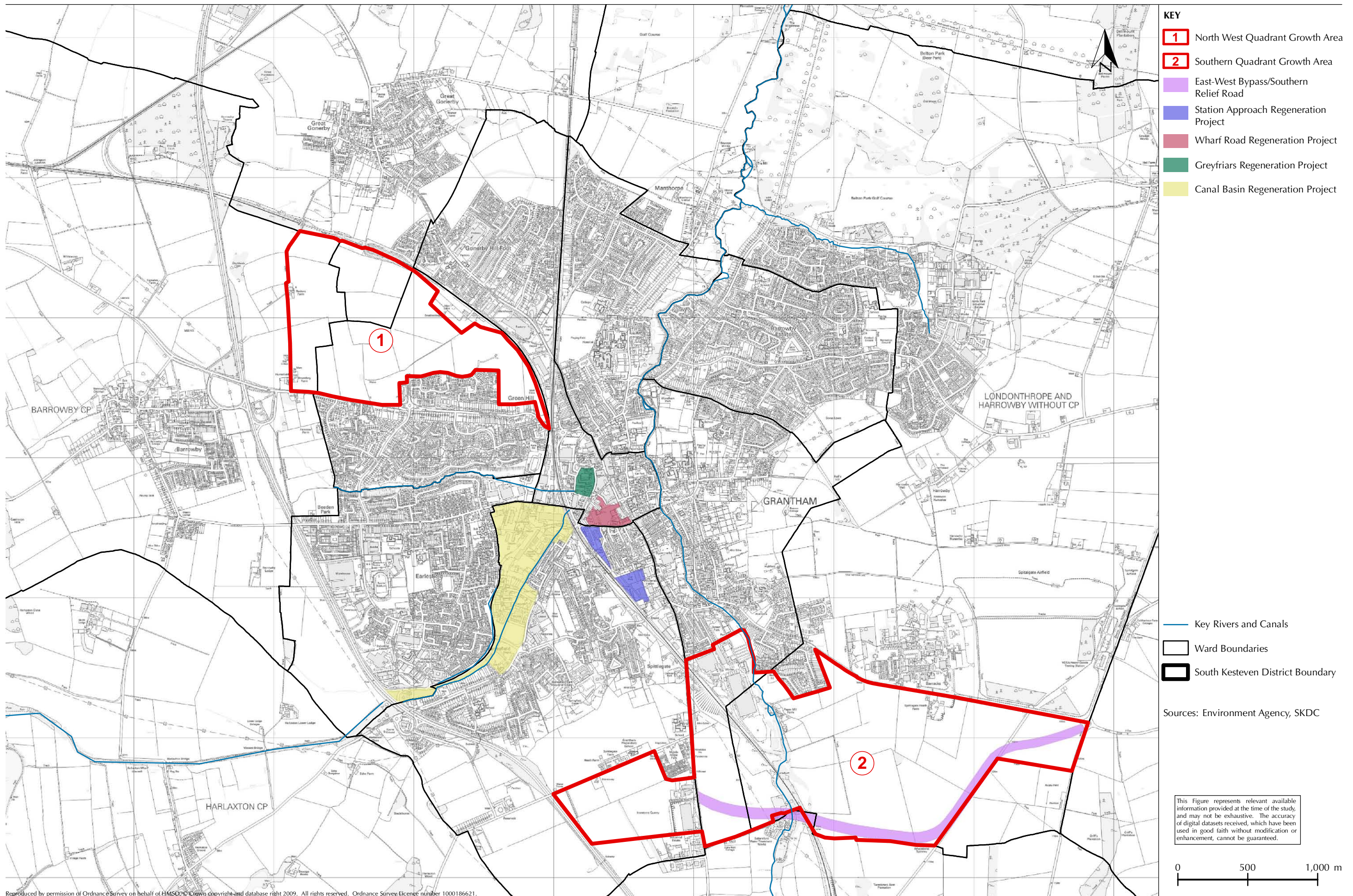
GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.15
Socio Economic - Living Environment



GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.16
 Socio Economic -
 Indices of Multiple Deprivation



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GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.17
Socio Economic - Proposed Major Development/
Regeneration Areas

schools, open space and community facilities. A new employment area adjacent to the A1, for which planning permission has been granted, will be developed as an early phase of this development and this will support the delivery of an improved strategic access to the A1. A new relief road will also be provided as part of the development (known as the East-West Bypass or Southern Relief Road), improving east west linkages across the town and offering the potential to remove traffic pressure from the town centre, particularly heavy goods vehicles.

2.8.10 **Grantham Town Centre** is the subject of a detailed masterplan, which will set out appropriate uses for the regeneration of the town centre to provide mixed-use development. The key town centre regeneration sites are outlined below.

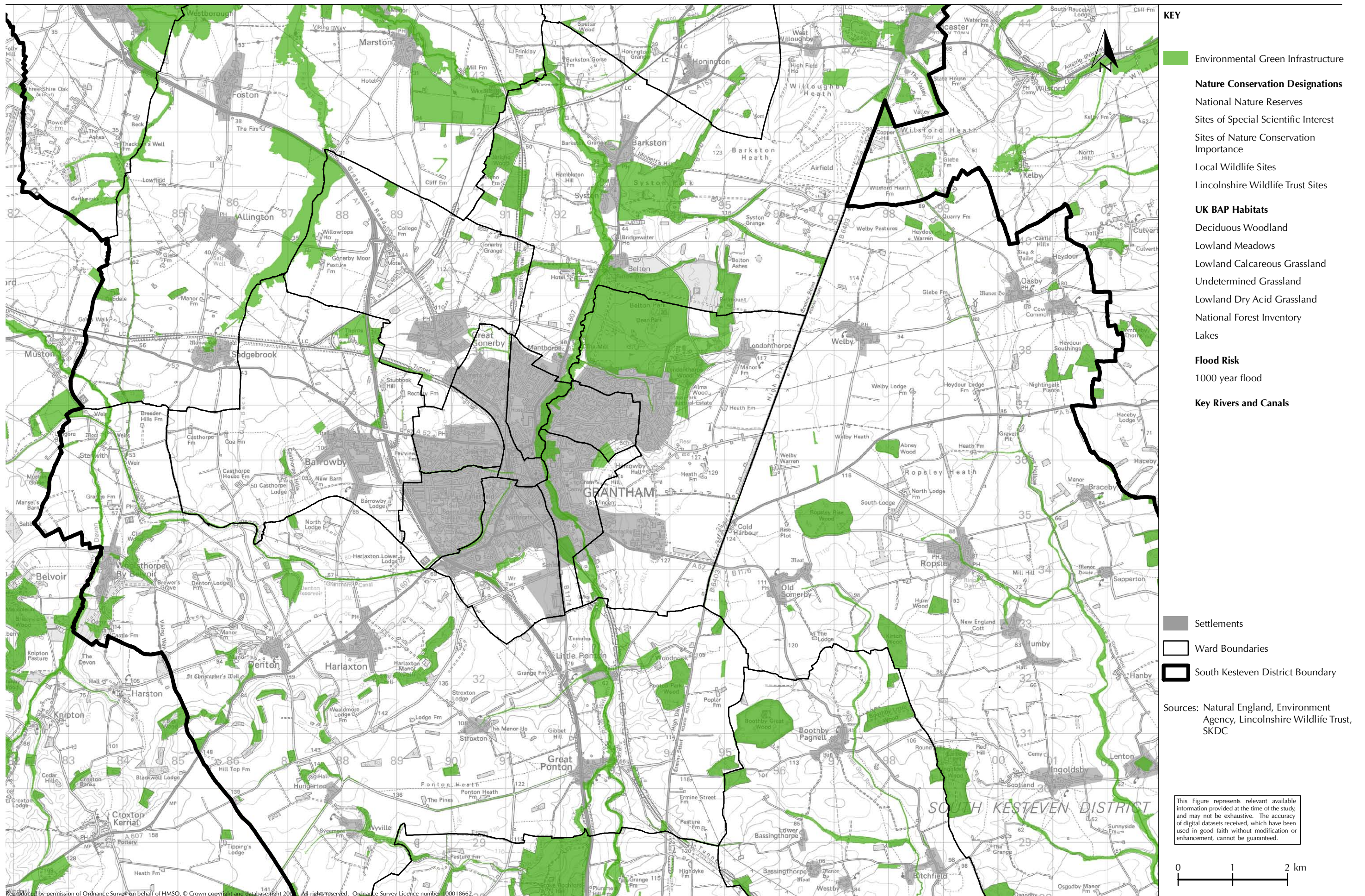
- **Station Approach** is a key strategic site and a major gateway into the town centre. The Development Brief seeks to create a new distinctive character area by redeveloping current brownfield land to the west and south west of the railway station. The Development Brief suggests a mixed use development for the site with the potential for office, light industrial and ancillary retail space, a hotel and business innovation/incubation centre.
- **Wharf Road** is a prominent town centre area identified as having the potential to become a significant 'gateway' site. A Development Brief is being prepared to set out the principles for development of the site for retail and town centre uses.
- **Greyfriars** is an underutilised area located in the heart of the town centre adjacent to the Market Place. It has the potential to be redeveloped in order to significantly improve Grantham town centre's retail and leisure offer. A Development Brief is being prepared for the site.
- **The Canal Basin** currently comprises a partially in-filled section of the Grantham Canal waterway, and is surrounded by post Second World War industrial uses and housing. Redevelopment of the site is at the heart of Grantham's regeneration plans for transforming the image and perception of the town by creating a new office quarter, diversifying the town's residential offer and generating a high quality visitor destination.

2.9 Summary of Existing Green Infrastructure

2.9.1 Drawing on the above audit, a simplified analysis has been undertaken of the principal environmental and cultural assets that are considered to be a key influence in defining the network of green spaces and links for Grantham. **Figure 2.18** illustrates the general extent and distribution of environmental green infrastructure assets within the Study Area. Cultural green infrastructure assets are illustrated on **Figure 2.19**.

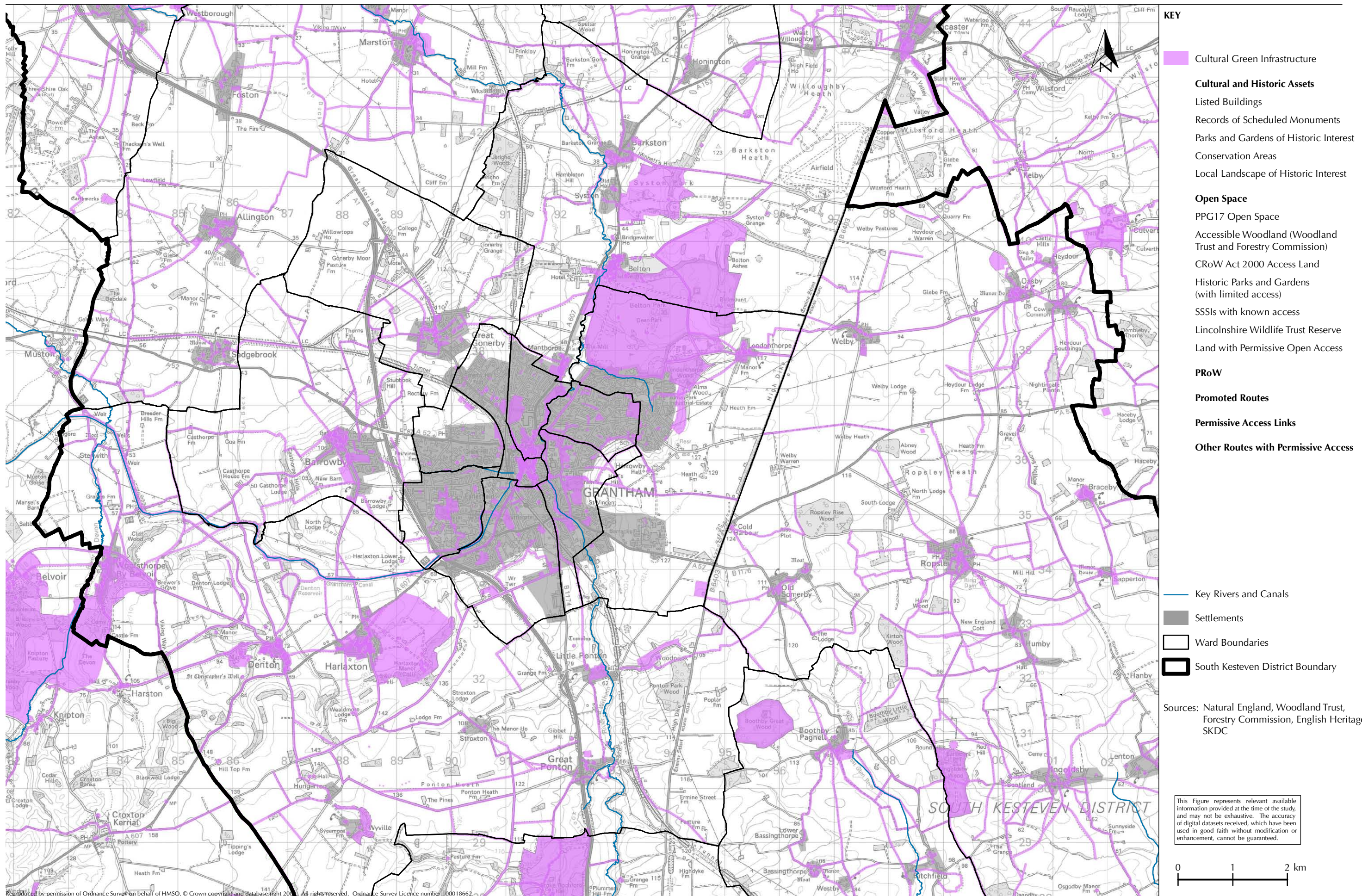
2.9.2 The network of existing green spaces and links within the Study Area is illustrated on **Figure 2.20** within the context of wards. It also shows those parts of the green space network which are accessible⁸⁴. This network provides the basis of the proposed Green Infrastructure Network for Grantham presented in **Section 4.0**. It has been defined by combining available

⁸⁴ For the purpose of this Study, this represented by accessible green spaces greater than 1ha in size.



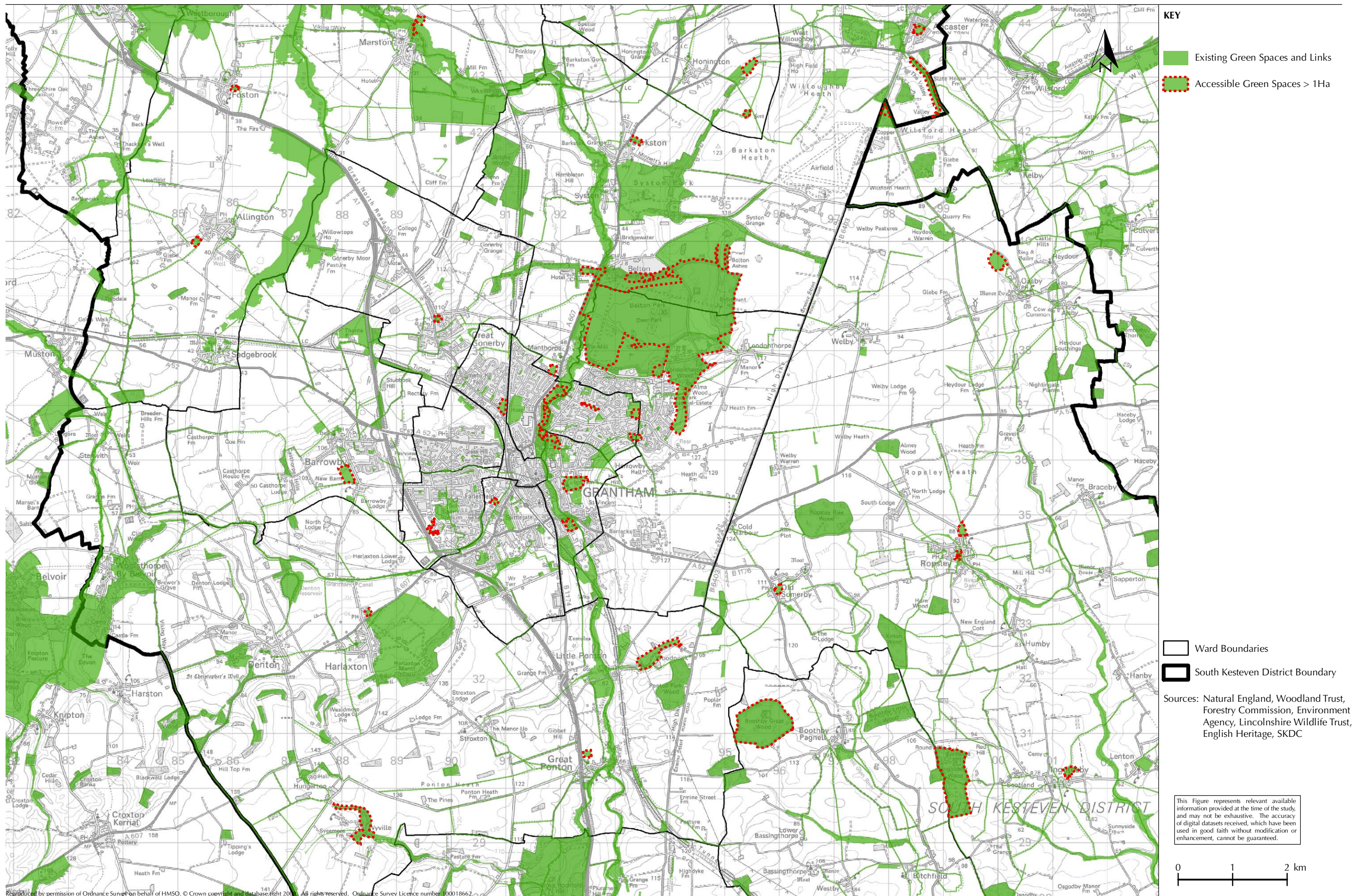
GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.18
Environmental Green Infrastructure - Summary



GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.19
 Cultural Green Infrastructure - Summary



GRANTHAM GREEN INFRASTRUCTURE STRATEGY

FIGURE 2.20
Existing Green Spaces and Links

environmental and cultural datasets that together provide a proxy for 'green spaces' and 'green links'. These datasets are:

- All natural and semi-natural spaces as identified on **Figures 2.2** and **2.3**;
- Flood risk zones as identified on **Figure 2.5**;
- Registered parks and gardens of national and local historic interest as identified on **Figure 2.9**;
- All open spaces identified on **Figure 2.10a**;
- Public rights of way (see **Figure 2.11a**);
- Permissive access links (see **Figure 2.11a**); and
- Other routes with public access (see **Figure 2.11a**).

2.9.3 **Table 9** in **Appendix A** provides a breakdown of the quantity of existing green spaces, green links and accessible green spaces within the Study Area by ward.

3.0 SENSITIVITY ANALYSIS OF GROWTH AREAS

3.1 General

3.1.1 This section sets out a sensitivity analysis of Grantham's Growth Areas in the North West and Southern Quadrants. Opportunities for safeguarding, enhancing and creating new green infrastructure as part of a connected and multi-functional network of green spaces and links are identified for each Quadrant.

3.2 North West Quadrant

Overview

- 3.2.1 The adopted Core Strategy identifies land at the Northwest Quadrant as the location for a Sustainable Urban Extension. The site will be developed to provide around 3,500 new homes, a primary school, medical facilities, a community centre and local shops, together with formal and informal public open space. Development of this site will also provide a road link between Pennine Way and Barrowby Gate and will include strong links with the town centre and across to Great Gonerby and Barrowby Gate.
- 3.2.2 The site is situated to the northwest of Grantham, to the north of the A52 and southwest of the B1174 Gonerby Roads. A branch-line of the main east coast mainline railway forms the northern boundary of the site, whilst the western boundary is formed by a track leading to Boundary Farm and Rectory Farm to the north. Housing lines the A52 at the southern edge of the site, with a recent housing estate extending to the north of the A52 in the east, along Pennine and Lindisfarne Ways. The A1 main road corridor is situated in close proximity to the western edge of the site.
- 3.2.3 Outline planning permission has been granted for Poplar Farm (subject to completion of a Section 106 Agreement), which cover a large proportion of the eastern section of the site. The outline planning consent is for the development of a mixed-use Sustainable Urban Extension comprising c.1,800 dwellings, community facilities (including primary school, community centre, retail use classes A1, A2, A3 and A5, doctors surgery, and elderly persons accommodation) and associated open space (including new playing fields, facilities, and changing rooms, children's play areas, informal networks of open space and allotments). The proposal includes a new railway bridge to complete the Pennine Way link road.
- 3.2.4 The North West Quadrant Site comprises predominantly arable fields, which are lined with a mixture of mature and more denuded hedgerows. Boundary Farm, comprising farm buildings

and associated houses, is situated in the south-western corner of the site and is accessed via an informal private track. This track also provides access to Rectory Farm to the north, which comprises a house and several farm buildings, surrounded by mature trees and hedges. Mature trees line much of the railway corridor along the northern and eastern edges of the site. A relatively large area of allotments known as the California Gardens Allotments⁸⁵, located immediately outside the north-eastern edge of the North West Quadrant Site, can be accessed from Maltings Lane, off Gonebery Road to the northeast.

- 3.2.5 The site lies on the western valley slopes of the River Witham. Generally, these slopes have an easterly aspect and fall back towards the town. The valley slopes continue to rise beyond the site boundary to the west to a high point (over 110 metres (AOD)) at Stubbock Hill. The eastern half of the site generally slopes more gradually and is also enclosed by rising land beyond the site to the north (including a rail line on embankment) and south.
- 3.2.6 Two minor valleys exist within the site and form relatively shallow depressions in the slopes leading up towards the western site boundary. These minor valleys fall towards and intersect in the centre of the site with the southerly one of the two including a minor watercourse/wet ditch. These relatively subtle variations in the rising slopes create a more rolling landform yet still maintain a general aspect towards the east and the existing settlement.

Ecological Appraisal

- 3.2.7 An Ecological Impact Assessment⁸⁶ was prepared in 2008 in relation to the 'Poplar Farm' planning application for the eastern part of the site. This included;
- A desk study review of the location and distribution (within 2km) of designated sites and records of species of nature conservation concern, including those protected by law;
 - A Phase 1 habitat survey;
 - A search for field signs of species of nature conservation concern, including those protected by law and an assessment of the potential of the surveyed area to support such species;
 - Surveys for specific protected species, namely badgers, breeding birds, great crested newts, reptiles and bats; and
 - An evaluation of the habitats and species present.
- 3.2.8 The above information, as well as an additional field survey of the western part of the site by CBA in October 2010 that was not covered by the previous surveys, has been used to assess the ecological characteristics of the site.

⁸⁵ The California Gardens Allotments do not form part of the North West Quadrant development site. It should be noted that plot holders have moved off the site.

⁸⁶ FPCR for Buckminster Trust and Norwich Hub Ltd., 2008. Poplar Farm, Barrowby Road, Grantham: Ecological Impact Assessment.

- 3.2.9 Much of the site comprises arable land of low value for nature conservation. However, a number of ground nesting bird species may use these areas for breeding⁸⁷. There are grassy margins to the fields in some places, and although this is generally species poor, these margins are used as foraging and commuting habitat by the badger group based at the main sett identified in the south of the site (see below).
- 3.2.10 A large part of the south eastern part of the site comprises poor semi-improved grassland. This is generally species poor, although there are some small areas that are moderately more species rich. Although of relatively low value for its flora these areas may be used by ground nesting bird species and also represent an important foraging area for the badger group.
- 3.2.11 There are allotments in the eastern corner of the site. Although the southern part of this is actively cultivated the northern part is unused and comprises a mosaic of dense and scattered scrub, rank, species poor grassland and a small area of species rich grassland and tall herb vegetation. The area also provides suitable habitat for breeding birds and foraging badgers. It is also suitable for reptile species, although a survey did not record any reptiles in this area.
- 3.2.12 There is a network of hedges throughout the site. Although mostly species poor these are more or less continuous in nature (except some examples in the western part of the site) and therefore provide some element of habitat connectivity within the site and linking other areas of relatively valuable habitat. Although, as noted, most of the hedges are species poor, there is one relatively species rich hedge in the north western part of the site. The hedges are likely to be important for breeding birds and are used as foraging and commuting habitat by the badger group.
- 3.2.13 There is a watercourse, the Running Furrow Drain, which flows north eastwards across the eastern part of the site. Much of this is narrow with steep banks and is heavily shaded by adjoining hedges, and therefore supports very limited aquatic vegetation. In contrast, the northern part of the watercourse within the site is wider and more open in character, with gently sloping banks and more extensive and abundant aquatic, emergent and marginal vegetation. Signs of water voles have been observed in the northern part of the watercourse and a grass snake has also been observed in this area. The watercourse has also been found to be an important foraging and commuting area for bats using the site⁸⁸.
- 3.2.14 There are two water bodies within the site. A pond is located at the western end of the Running Furrow Drain (see above) and forms the source for this watercourse. This supports little or no

⁸⁷ FPCR for Buckminster Trust and Norwich Hub Ltd., 2008. Poplar Farm, Barrowby Road, Grantham: Ecological Impact Assessment.

⁸⁸ FPCR for Buckminster Trust and Norwich Hub Ltd., 2008. Poplar Farm, Barrowby Road, Grantham: Ecological Impact Assessment.

aquatic or emergent vegetation and is surrounded by dense scrub. Another, apparently ephemeral pond is present on the southern edge of the site. This supports a number of common emergent and marginal plant species and small numbers of common toad and smooth newt have been recorded in this pond.

3.2.15 There are a very small number of mature trees within the site, as well as some scattered areas of scrub and tall ruderal ('weedy') vegetation.

3.2.16 Although lying largely outside the site boundary, the rail corridor that adjoins the northern edge of the whole of the site supports a mosaic of rough grassland, scrub and woodland on embankments, a cutting and over a tunnel. Gonerby Tunnel is designated as a Site of Nature Conservation Importance (SNCI) and a small part of this lies within the boundary of the site. There are further areas of woodland, scrub and rough grassland in areas to the north of the rail corridor. Taken as a whole this represents a relatively valuable area of continuous habitat and was found to be used for foraging and commuting by bat species³.

3.2.17 Notable and protected species that the site has been found to support or has the potential to support are listed and described below.

- **Breeding birds** – Arable and grassland have the potential to be used by ground nesting species and hedges, scrub, trees and woodland in particular are important habitats for breeding birds.
- **Badgers** – An active main sett and two outlier setts have been identified in the southern part of the site. In addition, grassland, scrub, hedges and field margins represent foraging and commuting habitat for the group based within these setts.
- **Bats** – Buildings within the eastern part of the site were found to be unsuitable for use as bat roosts. However, a number of buildings on the western edge of the site (at Rectory and Boundary Farms) have features, such as accessible roof spaces, which mean they have potential to be used as roosts. A single mature tree in the eastern part of the site was considered to have low potential to be used as a bat roost. There are a number of trees in the western part of the site, especially within the rail corridor (e.g. Gonerby Tunnel SNCI) that have potential to be used as bat roosts. Activity surveys for bats found that the Running Furrow Drain watercourse and associated hedges and habitat and the rail corridor were most heavily used by foraging and commuting bats. The network of hedges within the site is also likely to be of some importance in this regard.
- **Water voles** – Signs of water voles were observed in the northern part of the Running Furrow Drain watercourse, indicating that a small population of this species is present.
- **Reptiles** – a single grass snake was observed in the area adjoining the northern part of the Running Furrow Drain watercourse, indicating that a small population of this species is present. No other reptiles were recorded during a survey of suitable habitat in the eastern part of the site. There are areas of habitat suitable for reptiles especially along the rail corridor along the northern edge of the site.
- **Amphibians** – Great crested newts were not recorded during a survey of the two ponds within the site. However, small numbers of common toad and smooth newt were recorded in the ephemeral pond on the site's southern boundary. Terrestrial habitat including rough grassland, scrub and hedges are of value for amphibians and common frogs and toads were

recorded during the reptile survey in such habitats. There is limited breeding habitat, in the form of a number of drains, in the western part of the site, as well as suitable terrestrial habitat, especially along the rail corridor, but also along field margins.

Landscape and Visual Appraisal

- 3.2.18 A landscape and visual impact assessment was completed in September 2008 in relation to the 'Poplar Farm' planning application for the eastern part of the site. This assessment, as well as an additional landscape and visual site survey by CBA in October 2010 of the western part of the site that was not covered by the previous assessment, has been used to assess the landscape and visual characteristics of the site.
- 3.2.19 The 2008 Landscape and Visual Impact Assessment identified that there would be inevitable significant changes to the landscape of Poplar Farm, but that the quality of the current landscape is not of great intrinsic value. In addition, it identified that one quarter of the site will be set aside for open space as part of the proposed development, and the existing ecological features worthy of retention on the site will be substantially retained and enhanced. The assessment also noted that the proposals envisage a network of open space, new playing fields, and a substantial new tree planting regime⁸⁹.
- 3.2.20 The following key landscape and visual characteristics were identified in relation to the land outside of the Poplar Farm application:
- The Site slopes downwards from west to east and is covered by a medium-scale patchwork of predominantly arable fields, delineated by a network of hedgerows. In places, these are intact and mature, whilst in others, they are less well maintained and more gappy;
 - From the north-western edge of the Site (viewpoint 1), panoramic, open views westwards across the Trent and Belvoir Vale contribute to recognisable sense of place;
 - Within views east and northeast across the Site from the access track to Boundary and Rectory Farms and fields to the east, St Wulfram's church (within Grantham) is a key landmark and visual focal point, set against the rising eastern valley sides of the River Witham (viewpoint 2);
 - Looking southwards across the Site from fields to the east of Boundary Farm access track, moving traffic along the A52 road corridor (which forms the southern boundary of the site) is a visual detractor;
 - Low, trimmed hedgerows line the northern side of the A52;
 - Within views northwards from fields to the east of Boundary Farm access track (viewpoint 3), St Sebastian's church (within Great Gonerby) is a key landmark and visual focal point;
 - From viewpoint 3, distant views eastwards to the patchwork of wooded arable and pastoral fields on the ridge to the east of Belton contribute to recognisable sense of place;

⁸⁹ <http://forms.southkesteven.gov.uk/SKDC%20Internet%20Data/PlanningImageServer/Planning%20Assets/S08-1231/Additional%20Documents/03.%20Environmental%20Statement/Poplar%20Farm%20Non-Technical%20Summary.pdf>

- Bellmount Tower (within the parkland of Belton House) is also visible within far distance views from viewpoint 3;
- From fields immediately to the northeast and east of boundary farm, housing development within Great Gonerby is generally contained by the ridgeline to the north (viewpoint 2);
- Delineating the northern and eastern edges of the site, the railway corridor is lined with mature trees and hedgerows and is a key landscape feature both within views across the North west Quadrant Site and within views to it from Great Gonerby and housing within Grantham at Gonerby Hill Foot;
- Within views westwards across the Site, Stubbock Hill woodland is a key landscape features/focal point on the ridge;
- The warehouses and factory site to the northeast of the Site (north of the railway corridor and south of Gonerby Road) are visual detractors within views eastwards across the North West Quadrant Site and views northwards from new housing along Balmoral Drive. There are opportunities to screen the warehouses and factory site from view.

Historic Environment Appraisal

3.2.21 An archaeological and cultural heritage assessment⁹⁰ was undertaken in 2008 in relation to the ‘Poplar Farm’ planning application for the eastern part of the site. This assessment, as well as a desk-based search of the Lincolnshire Sites and Monuments Record for the entire Site in November 2010, was used to assess the historic environment characteristics of the site. For land within the North West Quadrant outside the Poplar Farm planning application area, archaeological field based evaluation was not undertaken.

3.2.22 The archaeological and cultural heritage assessment⁹¹ has identified that the ‘Poplar Farm’ application site lies within an area of known archaeological remains - the field-walking, magnetic-scanning and aerial photographic studies all identified potential archaeological remains with the application site and the archaeological trial trenching programme, targeted on cropmarks, artefact scatters and geophysical anomalies located using these techniques, confirmed the presence of archaeological remains on the application site. The assessment concluded that although careful management may allow for the preservation of remains located within areas of proposed open space and landscaping, all archaeological deposits located within areas allocated for construction, are likely to be impacted upon; and that responsibility for determining whether further archaeological work on the site is required rests with the South Kesteven Planning Archaeologist.

3.2.23 A desk-based search of the Lincolnshire Sites and Monuments Record for all land within the North West Quadrant Site’s boundary identified the presence of the following archaeological sites and findspots:

⁹⁰ Archaeology and Cultural Heritage, Poplar Farm, Grantham, Lincolnshire, Prepared for Buckminster Trust and Norwich Hub Ltd, May 2008, Archaeological Project Services.

⁹¹ Archaeology and Cultural Heritage, Poplar Farm, Grantham, Lincolnshire, Prepared for Buckminster Trust and Norwich Hub Ltd, May 2008, Archaeological Project Services

- Prehistoric finds from a Roman site in Barrowby in the north-western corner of the site;
- A prehistoric flint scatter and medieval ridge and furrow to the north-east of Rectory Farm;
- Possible prehistoric crop-marks to the north of Rectory Farm;
- A late Mesolithic to early Neolithic flint scatter on land at Gonerby Hillfoot;
- A Bronze-Age lithic scatter on land within the Poplar Farm application site; and
- Several Roman and Anglo-Saxon findspots in the south the site - including a Roman-Saxon glass bead on land within the 'Poplar Farm' application site, Roman pottery sherds, a sherd of pagan Saxon pottery, and Roman pottery near Denton Cottages.

3.2.24 The following observations were noted as a result of the overall historic environment appraisal:

- There are no Scheduled Monuments within the site or its immediate setting;
- There are no Listed Buildings within the site;
- There are no Registered Historic Parks and Gardens or Conservation Areas within the site;
- There are a number of archaeological sites and findspots scattered across the site;
- There are opportunities to safeguard views northwards from the Site to St. Sebastian's Church in Great Gonerby and south-eastwards towards St. Wulfram's Church in Grantham;

Access Appraisal

3.2.25 The following observations relating to access are based on a combination of desk-based research and field visits:

- There is an existing public footpath running along the north-western edge of the site, connecting to the village of Great Gonerby in the north. This footpath runs south-westwards from the site towards the A1 road corridor, however there is currently no footbridge/safe crossing point across this main dual carriageway road corridor. The footpath continues on the opposite side of the A1 and connects to the village of Barrowby;
- A second public footpath runs south-westwards from Rectory Farm (at the western periphery of the Site). Similarly there is currently no footbridge/safe crossing point across the A1. This footpath continues to the west of the A1 and also connects to Barrowby village;
- There are currently no public rights of way across the site, however it was identified as part of the Poplar Farm planning application, that the site is 'known to be informally accessed for walking and dog walking by surrounding residents;
- There are also no public footpaths crossing the railway corridor to provide access from the north of the Site to housing within the northern segment of Grantham; or across the railway to the town centre in the east (other than the public footpath along the A52);
- The A52 road corridor forms the southern boundary of the site and connects Grantham in the east to an interchange with the A1 in the west. This road includes a segregated cycle/footway; and
- A branchline of the main east coast railway delineates the northern and eastern edges of the site. There is currently no station in close proximity to the Site.

Environmental Sensitivities and Green Infrastructure Opportunities

3.2.26 Sensitive features of landscape, historic, ecological and/or access value within and around the North West North West Quadrant Site that are desirable to safeguard, and would benefit from positive enhancement, are shown on **Figure 3.1**. These include:

- The Running Furrow Drain watercourse and the two adjoining or associated ponds to the west and south;
- The area of disused allotments in the east of the site;
- The existing network of hedges which provide habitat links, create landscape structure and limit certain views across the site;
- Habitats within the rail corridor to the north, including Gonerby Tunnel SNCI, a small part of which lies within the site, and which collectively create a visual barrier/screen between the site and housing within Grantham to the north;
- The main badger sett with adequate associated habitat and features to limit disturbance and sufficient accessible foraging habitat to support the resident group;
- Populations of water voles and reptiles;
- Several key views to landmarks/open countryside, including: 1: panoramic open views westwards across the Vale of Belvoir; 2: Open views eastwards towards Grantham town centre with St Wulfram's church as a key landmark within the view; 3: Panoramic views northwards and south-eastwards towards the landmark St Sebastian's and Wulfram's churches respectively;
- Archaeological sites and findspot; and
- Existing public footpaths running north-south along the north-western edge of the site, connecting to Great Gonerby village in the north.

3.2.27 Opportunities⁹² to enhance/create new features of landscape and ecological value, and/or new access routes providing amenity benefits, within and around the North West Quadrant Site, are shown on **Figure 3.1**. These include:

- Creating an enhanced watercourse corridor along Running Furrow Drain, including naturalisation and diversification of the existing channel, enhancement of the western (feeder) pond and positive management of adjoining habitat, creation of new ponds and associated terrestrial habitat and habitat creation in adjoining areas, including, for example, grassland, scrub and trees;
- Buffering the existing habitats and features of value within the rail corridor on the northern edge of the site by extending them through habitat creation, to include, for example, grassland, scrub, and woodland. This would also strengthen landscape structure and present opportunities for enhanced public access, as linear routes and/or open access areas, which would connect to existing public footpaths in the northwest;
- Creating new woodland to the north of Running Funnel Drain (as per the site of historic woodland (1890-1892)) to screen warehouse and factory buildings to the north of the railway corridor and south of Gonerby Road within views from the site;

⁹² Opportunities identified by CBA unless otherwise specified.

- Creating a network of green links to provide habitat links, landscape structure and access routes. Such links could be created, for example, by using the existing network of hedges with new habitat creation in adjoining areas;
- Positive conservation management of areas with habitats of ecological interest;
- Providing safe access/footbridge across the A1 to connect existing footpaths and provide access between the North West Quadrant Site, Great Gonerby and Barrowby villages;
- Creating a new access link into town through the Barrowby Road Allotments;
- The draft Grantham Movement Strategy⁹³ has identified opportunities to provide a new local bus route running north-south across the site, connecting the A52 to Great Gonerby and Gonerby Road. In addition, it has also identified opportunities for footpath/cycle links as part of the urban extension running east-west and north-south across the site.

3.2.28 It should be noted that the representation of environmental sensitivities and green infrastructure opportunities illustrated in **Figure 3.1** are only indicative, and do not necessarily indicate an absolute constraint on development.

3.3 Southern Quadrant

Overview

3.3.1 The adopted Core Strategy identifies land at the Southern Quadrant as the location for a Sustainable Urban Extension site. The site will be developed to provide around 4,000 new homes, schools, medical facilities, a community centre, employment opportunities, a neighbourhood centre and a range of formal and informal public open spaces. As part of the development of the site, the Grantham East-West Relief Road will be constructed. The River Witham corridor and woodland areas of the site are important 'green' areas and will be incorporated into the design of the development.

3.3.2 The Site is situated at the south-eastern edge of Grantham, between Whalebone Lane in the east, extending westwards across the railway corridor to South Parade Road (B1174) as far as the A1 main dual carriageway in the west. Its north-western boundary follows Gorse Lane and its north-eastern boundary follows Bridge End Road.

3.3.3 The East Coast Main Line railway dissects the site as it travels from Peterborough Station northwards to Grantham Station. The River Witham also dissects the site, flowing south to north before entering Grantham town centre.

3.3.4 The western section of the site (to the west of the B1174 road corridor) encompasses an in filled, disused ironstone quarry, several large industrial warehouses and commercial car

⁹³ Grantham Urban Design Framework, Working Draft Grantham Movement Strategy, Part 1: The Strategy, Urban Initiatives, October 2010.

showrooms. To the east of the B1174, the site includes the corridor of the River Witham and pastoral fields, delineated by a network of hedgerows. Spittlegate Heath Farm lies within the west of the area and in the central northern section, the Site is dominated by large-scale works to the south of Albert Street.

Ecological Appraisal

3.3.5 An Environmental Impact Assessment Scoping Report⁹⁴ was prepared in 2009 in relation to the proposed construction of a relief road through the site. This included:

- A desk study review of the location and distribution of designated sites and records of species of nature conservation concern, including those protected by law, within 2km of the site;
- A Phase 1 habitat survey of most of the Site to the east of the B1174 (excluding most of the industrial site in the north); and
- A field assessment of the potential of the surveyed area to support species of nature conservation concern, including those protected by law.

3.3.6 In addition, a large proportion of the remaining part of the site to the west of the B1174 was surveyed (2008) in a similar way in relation to a planning application⁹⁵. These reports, as well as an additional field survey of those areas of the site not previously surveyed undertaken by CBA in October 2010, have been used to assess the ecological characteristics of the site.

3.3.7 Much of the eastern and western parts of the site comprise arable or improved grassland with a network of species poor hedges. Although the arable and improved grassland is of relatively low value for nature conservation there are brown hares in these areas. In addition, ground nesting bird species may use them for breeding and a flock of 100-200 golden plover was observed using fields (for foraging) in the eastern part of the site during the October 2010 survey. The hedges have some value as habitat themselves as well as providing a degree of linkage with and between other areas of habitat.

3.3.8 The corridors of the River Witham and the East Coast Mainline, which form the central part of the site, support a range of habitats of substantial nature conservation value, including swamp/fen, grassland, scrub, woodland and standing water (ponds) as well as the River Witham itself. Most of this has received non-statutory designation (Local Wildlife Site or Site of Nature Conservation Importance). The habitats and features present in this area support a number of notable and protected wildlife species, including a nationally important population of white-clawed crayfish, otter, and reptiles, including grass snake.

⁹⁴ Jacobs for Lincolnshire County Council, 2009. Grantham Southern Relief Road, EIA Scoping Report.

⁹⁵ Aspect Ecology for Hampton Brook Ltd, 2008. Land at Gorse lane, Grantham, Ecological Assessment.

- 3.3.9 Whalebone Lane in the east of the site is lined with hedges and has an avenue of developing trees along much of its length. On the verge at the northern end there is a small relic area of calcareous grassland, although much of the rest of the field layer is species poor grassland, bramble or ruderal ('weedy') vegetation.
- 3.3.10 There is a disused quarry in the western part of the site. This supports a very sparse flora of annual and perennial species and depressions support shallow ephemeral ponds. The banks around the edges of the quarry support coarse grassland, scrub and planted belts of native and non-native trees. The grassland is suitable habitat for reptiles although none were recorded during a survey carried out in 2008⁹⁶.
- 3.3.11 Other habitats are largely built, with buildings and areas of hard standing, especially at the Invictas Works in the north of the site and the industrial and trading estate on the western side of the B1174.
- 3.3.12 In addition to the species noted above, other notable and protected species that habitats and features within the site have the potential to support are:
- **Breeding birds** – especially woodland and trees, scrub and hedgerows;
 - **Bats** – roosts in trees, especially mature trees supporting features such as cracks, cavities and growths of ivy and some buildings, especially those with suitable roof spaces. Foraging areas, especially along the River Witham and east Coast mainline corridors and along hedge lines and tree belts;
 - **Water voles** – along the River Witham, although the initial extended Phase 1 survey⁹⁷ did not find any sign of the species and
 - **Amphibians** – notably the potential for great crested newt *Triturus cristatus* in water bodies in the River Witham corridor and associated terrestrial habitat.

Landscape and Visual Appraisal

- 3.3.13 A landscape and visual site survey was undertaken by CBA in October 2010 for the entire site, which identified the following key landscape and visual characteristics:
- The western section of the Site comprises a relatively large former ironstone quarry which is surrounded by arable fields with low trimmed hedgerows at field boundaries;
 - Buildings within Tollemache Industrial Estate, with metal railings demarcating boundaries, are visual detractors within views southwards across the site;
 - Sense of tranquillity within this western section is disturbed by the constant sound of moving traffic on the A1 dual carriageway road corridor at the western edge of the site;

⁹⁶ Aspect Ecology for Hampton Brook Ltd, 2008. Land at Gorse lane, Grantham, Ecological Assessment.

⁹⁷ Jacobs for Lincolnshire County Council, 2009. Grantham Southern Relief Road, EIA Scoping Report.

- In the northwest of the Site, the large-scale factory and warehouses at Invictas Works are key visual detractors within views westwards from the western edge of Bridge End Grove (to the east of the river corridor) – viewpoint 3;
- To the west of housing along Bridge End Grove (east of the river corridor), a small children’s play area/recreation space provides a key open space within the Site. There is an opportunity to improve and enhance this space and potentially provide links with the river corridor and adjacent habitats, where safe to do so;
- From the B1174 (viewpoints 1a, 1b and 1c) open views eastwards across the valley of the River Witham are a key feature, with rising western slopes punctuated by patches of woodland providing the backdrop to the view;
- The valley of the River Witham and its associated fields and trees lining the river corridor (see **Appendix B** for a detailed description of the landscape and visual characteristics of the river corridor) is a key feature of the Site;
- The course of the river (tree lined along much of its length) is a key feature within views eastwards from the footpath running north-south along the eastern side of the river (viewpoints 2a and 2b);
- Within the river corridor (comprising the river channel and immediately adjacent pastoral fields) there is a relatively strong sense of tranquillity;
- INVICTAS works and playground
- The eastern section of the Site (to the east of the river corridor) is dominated by medium to large-scale arable fields which are delineated by a patchwork of mature and low, trimmed hedgerows. These fields slope downwards towards the valley of the River Witham in the west part of this section;
- From viewpoints along the A52 (in the north – viewpoint 4) and Whalebone Lane (in the east – viewpoint 5) views are dominated by this patchwork of arable fields;
- Whalebone Lane (at the eastern edge of the Site) has a predominantly straight course and is rural in character, lined along both sides by mature trees, hedgerows and wide grass verges;
- It is possible that Whalebone Lane was historically a Drover’s Road, used to transport cattle; and
- There are no public footpaths to the east of the river, however views from fields at the top of the valley sides are dominated by the river corridor, lined with mature trees.

Historic Environment Appraisal

3.3.14 A Cultural Heritage Baseline Assessment was produced in 2009⁹⁸ in relation to the proposed construction of a relief road through the site. This assessment, as well as a desk-based search of the Lincolnshire Sites and Monuments Record for the entire Site, have been used to assess the historic environment characteristics of the site. An archaeological field based evaluation was not undertaken for the site.

3.3.15 The cultural heritage baseline assessment, in relation to the Site, identified the following key aspects:

⁹⁸ Jacobs for Lincolnshire County Council, 2009. Grantham Southern Relief Road, EIA Scoping Report.

- The site of a probable Roman town;
- Three additional undesignated archaeological sites that were not recorded on the National Monuments Record or Historic Environment Record;
- It is likely that both prehistoric and Roman activity within the Site was related to crossing points of the River Witham, which is shallow and easily fordable in this area. The higher ground either side the river would have provided an excellent route for travel, and this was connected with other ridges and high ground to the north and south. Together, these topographical characteristics make the Site a natural crossroads and the concentration of archaeological remains reflects this;
- The 'Jurassic Way' is a notional routeway connecting areas of high ground thought to have been used for travel throughout the prehistoric period. It is possible that the concentration of prehistoric sites within the Site is related to this routeway. Most of the sites are findspots of individual artefacts or scatters of material. In the valley, artifact scatters including pottery and metalwork dating from the Bronze Age through to the late Iron Age may indicate the presence of prehistoric settlement;
- The site of a possible ploughed out Bronze Age barrow is noted by the Historic Environment Record and National Monuments Record. On the Lincoln Edge to the north and along the Witham Valley, these burial sites are often grouped together into 'cemeteries'. While no discrete grouping of barrows are noted here, this site may relate to other possible and known barrows outside the Site's boundary, including the 'Bowl Barrow 450m northwest of St Guthlac's Church, which is a Scheduled Ancient Monument;
- Archaeological evaluation has recovered evidence for Iron Age settlement activity in the north-west of the Site. This comprised ditched enclosures, pottery and large amounts of animal bone;
- The line of the Jurassic Way was later formalised by Roman Roads. 'Ermine Street' (now the modern B4063) forms part of the eastern boundary of the site. The National Monuments Record describes this as one of the most important roads of Roman Britain;
- Another Roman Road known as 'Salter's Way' is recorded, this runs from north-east to south-west. Possible traces of this road, in the form of two parallel ditches in the field south of Spittlegate Heath Farm are visible on aerial photographs;
- Where Salter's Way meets the River Witham, Roman finds including pottery, metal work, remains of a wall and a possible cemetery have been identified. This has led to the theory that this is the site of a Roman settlement of 'Causennis', previously thought to be located at Ancaster. Archaeological investigations undertaken on and near the waterworks did not identify the full extent of the settlement but suggest that it may occupy a large portion of the Site west of the River Witham. A dolphin brooch and coin hoard may also be related to this settlement;
- Finds dating to the Early Medieval period include pottery, a knife and evidence of metalworking activity in the same area as the possible Prehistoric and Roman settlements noted above. This leads to the possible interpretation that there is further Early Medieval settlement at or near this location;
- The site of the medieval village of Haughton is recorded within the Site by the Historic Environment Record and has been identified through documentary and historic map evidence. The site is now occupied by Paper Mill Farm and the National Monuments Record notes that no traces of the original village were visible during site surveys.
- The site of a Post-Medieval paper mill is recorded adjacent to the now disappeared village of Haughton. The mill is no-longer extant but some of the buildings may have been incorporated into the present farm complex;
- Other Post-Medieval industrial sites include the site of now demolished brickworks to the north west of Paper Mill Farm. The Great Northern Railway, which opened in 1852 and remains in use, runs north-south through the Site;

- In the south of the Site, the Historic Environment Record records parkland associated with Little Ponton Hall, identified from historic mapping;
- The first edition 6 inch Ordnance Survey mapping shows two limekilns located in the former quarry now occupied by Spittlegate Heath Farm. The mapping also shows a now destroyed farmstead east of Whalebone Lane called 'Spittlegate Heath Farm'. This farmstead seems to have been a predecessor to the present farm and all buildings have been removed. Also east of Whalebone Lane and further to the south, the first edition 6 inch Ordnance Survey map shows a small feature labelled 'The Whalebone'. There is no clue as to the nature of this feature on the map, and the site is no-longer extant;
- Two dish-shaped depressions were noted close to the line of Salters Way Roman Road, measuring approx. 30-40m in diameter. Aerial photography indicates that at least one of these may be related to quarrying of unknown date;
- The Railway Bridge over the River Witham was constructed as part of the Great Northern Line and was erected in advance of the line's opening in 1852;
- Grantham Waterworks is shown on the first edition 6" Ordnance Survey map of 1886 and was considerably extended in the late 20th century; and
- Spittlegate Heath Farm was developed from the later 19th century within a former quarry to the south of the current A52. The first edition 6" Ordnance Survey map shows the quarry in active use and shows a number of limekilns and small rectangular structures within the site. The farmhouse and a small number of outbuildings are shown to be present by the 1905.

3.3.16 A desk-based search of the Lincolnshire Sites and Monuments Record for all land within the Southern Quadrant Site's boundary identified the presence of the following archaeological sites and findspots:

- A prehistoric ring ditch to the east of Great North road;
- A Bronze-Age crop mark within the Ironstone Quarry;
- Iron-Age settlement activity at the junction of Horse lane and the B1174, in the north-east of the site;
- Romano-British settlement at Saltersford, alongside an early Neolithic flint scatter to the west; and
- Historic factory buildings on the site of Albert Street Works.

3.3.17 The following observations were noted as a result of the overall historic environment appraisal:

- There are no Scheduled Monuments within the site, however 'Bowl Barrow 450, North West of St Guthlac's Church (SAM 27863)' is located approximately 600 metres to the south of the site;
- There are no Listed Buildings within the site, however, several are located within Grantham urban area, in close proximity to the northern edge of the site;
- There are no Registered Historic Parks and Gardens or Conservation Areas within the site. However, Little Ponton parkland is a landscape of local historic interest; and
- There are a number of archaeological sites and findspots scattered across the site.

Access Appraisal

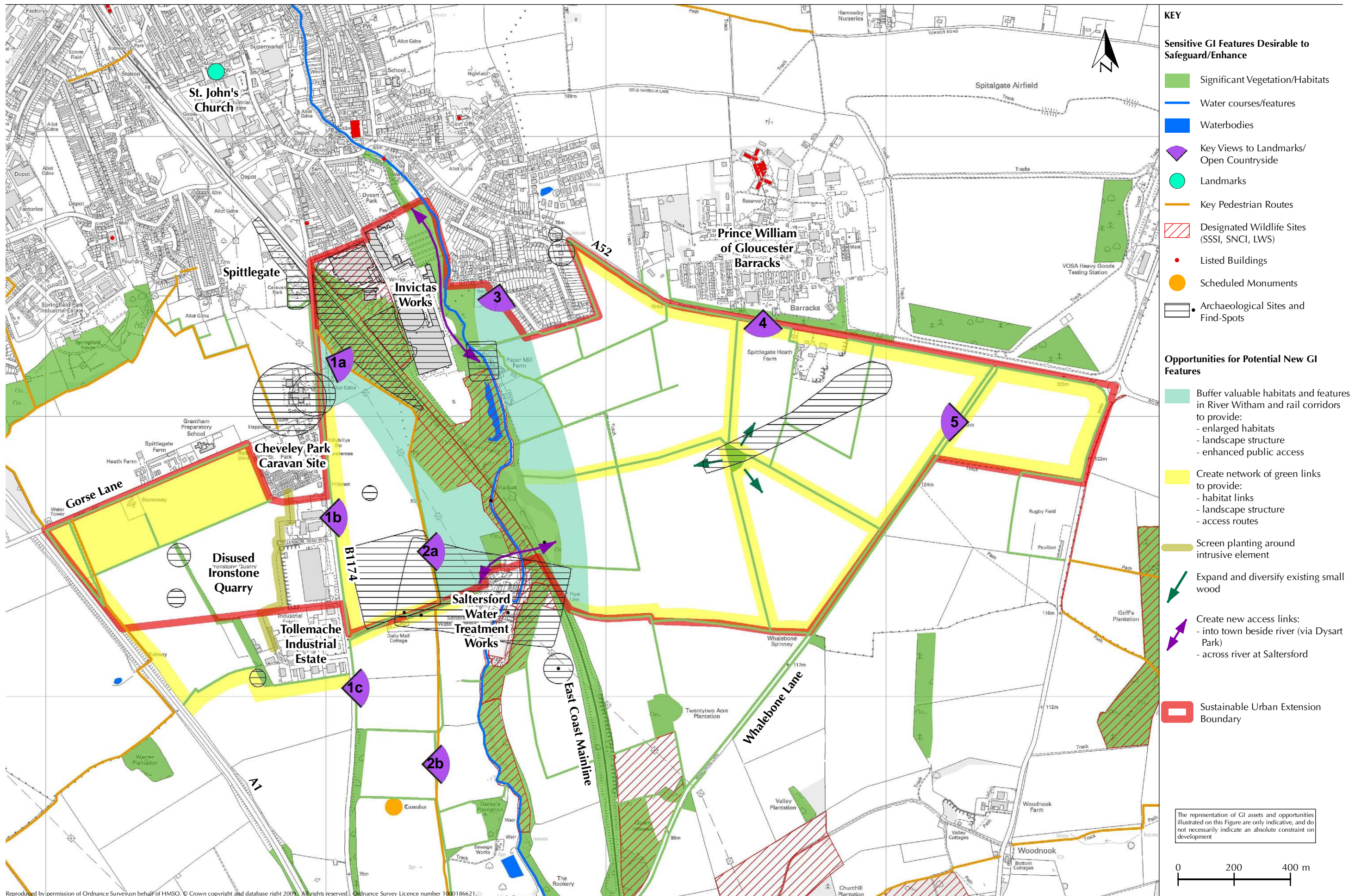
3.3.18 The following observations relating to access are based on a combination of desk-based research and field visits:

- A public footpath runs north-south along the western edge of the Site. The footpath crosses the A1 main road corridor to provide access to Stroxtun in the west, however there is no footbridge or safe crossing point;
- The corridor of the main A1 dual carriageway runs along the western edge of the site;
- Gorse Lane, a minor road corridor, forms the north-western boundary of the site, crossing the A1 on a road bridge and connecting with the B1174 in the east;
- The B1174 (Great North Road) runs north-south across the Site connecting Grantham in the north to an interchange with the A1 in the south;
- The East Coast Mainline railway also dissects the centre of the Site, running north south. The nearest station to the Southern Quadrant Site is Grantham, within the town centre to the north;
- The A52 main road corridor forms the north-western boundary of the Site, running westwards through Grantham town centre to connect with the A602 which has an interchange with the A1 in the west;
- The eastern boundary of the Site is partly formed by a minor rural road (Whalebone Lane) which runs north south and connects the A52 to Little Ponton hamlet in the south (passing under the railway corridor);
- There are no public footpaths to the east of the river or railway corridor within the Site; and
- A public footpaths runs north-south along the western valley side of the River Witham, from Little Ponton to Spittlegate in the north, however there are no river or railway crossing points. There is also no connection between this footpath (via the works to the south of Albert Street) and the north-south Riverside footpath following the River Witham running through Grantham.

Environmental Sensitivities and Green Infrastructure Opportunities

3.3.19 Sensitive features of landscape, historic, ecological and/or access value within and around the Southern Quadrant Site that are desirable to safeguard, and would benefit from positive enhancement, are shown on **Figure 3.2**. These include:

- Habitats and features of nature conservation importance in the River Witham and East Coast Mainline corridors, including the River Witham itself, swamp/fen, grassland, scrub, woodland and standing water (ponds), and including (but not confined to) all designated sites;
- The network of hedges and tree belts which provide an element of habitat connectivity and are key landscape features and delineate the river corridor within views from nearby roads and footpaths. This network also provides a sense of enclosure along the river corridor;
- Archaeological sites and findspot; and



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FIGURE 3.2
 Southern Quadrant Growth Area - Sensitivities and Opportunities

- Open views across the Site, particularly to the valley sides of the River Witham, which contribute to a recognisable sense of place. Potential development on the higher slopes is likely to be highly visible from the wider landscape if not screened with vegetation.

3.3.20 Opportunities⁹⁹ to enhance/create new features of landscape and ecological value, and/or new access routes providing amenity benefits, within and around the Southern Quadrant Site, are shown on **Figure 3.2**. These include:

- Buffering the existing habitats and features of value within the River Witham and East Coast Mainline corridors by extending them through habitat creation, to include, for example, grassland, scrub, and woodland. Such habitat buffers would also strengthen landscape structure, provide screening for potential new development and present opportunities for enhanced public access, as linear routes and/or open access areas;
- Creating a network of green links to provide habitat links, landscape structure and access routes. Such links could be created, for example, by using the existing network of hedges with new habitat creation in adjoining areas;
- Positive conservation management of areas with habitats of ecological interest;
- Creating a safe crossing point of the A1 road corridor in the west, to link access between the Site and landscape to the west, including the hamlet of Sproxton;
- Introducing planting of large-scale trees around existing warehouses and factory sites (such as at Invictas Works and Tollemache) to provide a visual buffer and screen buildings within views from nearby footpaths, roads and housing areas. Screen planting around the industrial and trading estate on the western side of the B1174;
- Expanding and diversifying the existing small wood in the eastern part of the site; and
- Creating new access links into Grantham (in the north) along the River Witham (via Dysart Park) and east-west across the River Witham at Saltersford.

3.3.21 It should be noted that the representation of environmental sensitivities and green infrastructure opportunities illustrated in **Figure 3.2** are only indicative, and do not necessarily indicate an absolute constraint on development.

⁹⁹ Opportunities identified by CBA unless otherwise specified.

4.0 GREEN INFRASTRUCTURE STRATEGY

4.1 General

4.1.1 This section sets out the proposed Green Infrastructure Strategy for Grantham to 2026 in support of the vision, objectives and policies of the Area Action Plan. The overarching concepts of the Green Infrastructure approach that underpin the Strategy are explained, together with a series of core principles for guiding the implementation and delivery of Green Infrastructure to support the sustainable regeneration and growth of Grantham.

4.2 Overarching Concepts

4.2.1 The overarching concepts of the Green Infrastructure approach that underpin this Strategy are:

- Green Infrastructure Functions
- Place-making
- Multi-functionality
- Green Infrastructure and the Built Environment
- Delivering Benefits
- Ecosystem Services

Green Infrastructure Functions

4.2.2 As Natural England's Green Infrastructure Guidance (2009)¹⁰⁰ demonstrates, the functions (or services) that green infrastructure can fulfil are wide ranging. These include the following **seven key functions**:

- Landscape setting and context for development;
- Access, recreation, movement and leisure;
- Habitat provision and access to nature;
- Energy production and conservation;
- Food production and productive landscapes;
- Flood attenuation and water resource management; and
- Countering the 'heat island' effect of urban areas.

4.2.3 Investment in well designed and connected multi-functional green infrastructure networks can provide benefits that will help achieve many of the Government's sustainable development policy priorities, including:

- **Economic priorities** – economic growth and employment;

¹⁰⁰ <http://naturalengland.etraderstores.com/NaturalEnglandShop/Product.aspx?ProductID=cda68051-1381-452f-8e5b-8d7297783bbd>

- **Environmental priorities** – protect and enhance cultural heritage; protect and enhance the landscape, geodiversity and natural environment; biodiversity conservation and enhancement; and climate change adaptation and mitigation; and
- **Social priorities** – community cohesion and life-long learning, volunteering; healthy communities; health and well-being, and access and recreation.

4.2.4 An example of how an individual green infrastructure component can fulfil various functions is provided by the River Witham. Investment in the River Witham corridor as part of Grantham’s green infrastructure network provides benefits that will help achieve economic, environmental and social policy priorities, by delivering the following key functions:

- Flood attenuation and water resource management
- Access, recreation, movement and leisure;
- Landscape setting and context for development; and
- Habitat provision and access to nature.

Place-making

4.2.5 Green infrastructure planning can also play a key role in ‘place-making’. This is the process of recognising the character, distinctiveness and sensitivities of different places, and ensuring that policies, programmes and proposals respond accordingly to landscape and townscape character, vernacular and sense of place. The quality and management of the countryside in and around towns, and neighbourhoods, streets and parks in urban areas, have a major influence on civic pride, community values/perceptions and local identity.

4.2.6 Green infrastructure planning has a key role to play in the place shaping process. For example, through development of green infrastructure design principles for growth areas which respond to landscape/townscape character, vernacular and sense of place, and fostering community ownership and involvement in the delivery and management of green infrastructure on the ground through local engagement in project design, implementation and maintenance.

Multi-functionality

4.2.7 ‘Multi-functionality’ – the potential for green infrastructure to have a variety of functions which deliver a broad range of social, economic and environmental benefits or services for society – lies at the core of the green infrastructure concept. Whilst multi-functionality can apply to individual spaces and routes, a fully multi-functional green infrastructure network will best be achieved when the variety of functions provided by the individual elements are considered together at all spatial scales – such as individual green spaces encapsulated within urban areas and extensive green spaces at the landscape-scale in the wider countryside.

4.2.8 A green infrastructure approach to development considers exploring variations in density and layout to provide opportunities for creating multi-functional and thus more useful green spaces. For example, planning of sustainable drainage systems (SuDS) as an integral part of new development to provide flood attenuation and water management functions, while also providing associated opportunities for habitat provision and contributing to landscape/sense of place. Green spaces can also be designed as ‘common ground’ to link and enhance the permeability of different parts of a development, with opportunities for recreation and play designed in from the outset

Green Infrastructure and the Built Environment

4.2.9 The green infrastructure approach goes beyond consideration of natural green spaces and other open spaces, to also consider the built environment. Subject to the need to protect and enhance townscape features of historic and ecological significance, there are significant opportunities to retrofit green infrastructure into established built environments, and to embed green infrastructure into new built environments/growth areas, through creative design and use of measures such as:

- Green roof systems and roof gardens;
- Green ‘living’ walls to provide insulation or shading and cooling;
- Sustainable drainage systems/swales integrated as part of streetscape/traffic calming schemes or neighbourhood play areas;
- New tree planting or altering the management of land associated with transport corridors (e.g. management of verges to enhance biodiversity); and
- De-canalisation of natural watercourses to enhance townscape character and biodiversity within urban areas.

4.2.10 It should be recognised that it may not always be practical for green infrastructure components to be immediately available ‘on the doorstep’ of every community, particularly if ‘retro fitting’ green infrastructure into established high density urban environments where design solutions such as those outlined above may not be possible. In these cases, green infrastructure planning needs to focus on linking communities and wildlife within an urban area to outlying green space in the wider countryside – such as via a river corridor.

Delivering Benefits

4.2.11 The potential wide ranging benefits which may be delivered in relation to the seven green infrastructure functions are identified in **Table 4.1**. In addition to environmental and social benefits, all of the functions can help deliver economic growth and employment benefits, which presents a compelling case for investment in green infrastructure. Practical realisation of these benefits will depend on appropriate design and future management of green

infrastructure, and effective engagement with partners and stakeholders during the design and implementation process.

Table 4.1 - Green Infrastructure Benefits¹⁰¹

	ECONOMIC	ENVIRONMENTAL					SOCIAL	
	Economic growth and employment	Protect and enhance cultural heritage	Protect and enhance the landscape, geodiversity and natural environment	Biodiversity conservation and enhancement	Climate change adaptation and mitigation	Promoting sustainable transport and reducing the need to travel by car	Community cohesion, life-long learning and volunteering	Healthy communities and well being
LANDSCAPE SETTING AND CONTEXT	Green economy, including making attractive places for living and working, and to visit. Potential to increase property values.	Making attractive places for living and working, and to visit.	Opportunity to provide enhanced landscape setting and to relate development to landscape character, place and context.	Opportunities for habitat enhancement and creation.	Opportunity to use water management for flood attenuation and for enhanced landscape setting, and for SUDS to link development to landscape context.	Creating attractive settings in keeping with landscape setting for walking and cycling (e.g. greenways).	Community involvement and participation, interpretation and education.	Places for meeting and events; provide a sense of place and identity.
ACCESS, RECREATION, MOVEMENT AND LEISURE	Green economy, including making attractive places for living and working.	Opportunities for education and interpretation, and to safeguard sites.	Opportunities for education and interpretation, and to safeguard sites.	Opportunities for education and interpretation, and to safeguard sites.	Sustainable and appropriate design e.g. access routes/ greenways in the floodplain or riverside parks designed to seasonally flood.	Increased permeability of urban areas for walking, cycling and horse riding. Providing recreational opportunities closer to residential areas.	Places for meeting and events. Reducing the perception of crime through enhanced permeability and accessibility.	Healthy communities; health and well-being. Opportunities for exercise (passive and active recreation), relaxation and improved mental health.

key

Government Policy Priorities
GI Functions
GI Benefits

¹⁰¹ Adapted from Natural England’s Green Infrastructure Guidance (2009)

	ECONOMIC	ENVIRONMENTAL					SOCIAL	
	Economic growth and employment	Protect and enhance cultural heritage	Protect and enhance the landscape, geodiversity and natural environment	Biodiversity conservation and enhancement	Climate change adaptation and mitigation	Promoting sustainable transport and reducing the need to travel by car	Community cohesion, life-long learning and volunteering	Healthy communities and well being
HABITAT PROVISION AND ACCESS TO NATURE	Green economy, including making attractive places for living and working, and to visit. Potential for increased property values.	Opportunity for interpretation of historic landscape features and habitats e.g. distinctive pollarded trees and historic hedgelines.	Alleviate pressures on sites through provision of alternative access to nature.	Opportunity to conserve, enhance and reinforce habitats (contribution to BAP targets). Increasing overall size of habitats may enhance their ability to absorb carbon (e.g. Fenland). Opportunities to create buffers and links, and to safeguard designated sites.	Linking sites to reverse habitat fragmentation; creating buffers.	Designing access routes to avoid sensitive sites/areas but provide 'visual' access to nature (physical access is not always necessary for benefits to be gained).	Community involvement and participation in creation and on-going management. Opportunities for education and interpretation.	Physical and psychological benefits of access to nature ('visual' access as well as physical). Opportunities for practical 'green gym' type activities.
ENERGY PRODUCTION AND CONSERVATION	Green economy, including making energy efficient and sustainable places to live and work.	Opportunities for traditional woodland management techniques – e.g. wood fuels, etc.		Contribution of biomass fuel planting to biodiversity.	Provide the setting for renewable energy generation. Opportunities for climate change adaptation.	Promote sustainable transport routes and fuel/energy conservation.		Increased use of green energies/ biomass fuels etc leads to improved air quality.

key

Government Policy Priorities
GI Functions
GI Benefits

	ECONOMIC	ENVIRONMENTAL					SOCIAL	
	Economic growth and employment	Protect and enhance cultural heritage	Protect and enhance the landscape, geodiversity and natural environment	Biodiversity conservation and enhancement	Climate change adaptation and mitigation	Promoting sustainable transport and reducing the need to travel by car	Community cohesion, life-long learning and volunteering	Healthy communities and well being
FOOD PRODUCTION AND PRODUCTIVE LANDSCAPES	Green economy, including making attractive and sustainable places to live and work.	Opportunity to conserve elements of the historic landscape, such as orchards, allotments and small holdings.	Opportunity to enhance the landscape through appropriate design and management (e.g. community orchards, which make reference to landscape character).	Opportunities to incorporate conservation features within agricultural areas.	Contribute to a carbon efficient approach to living.	Contribute to a carbon efficient approach to living – low ‘food miles’.	Opportunities for food growing on allotments and community gardens, community involvement in planting and maintenance; education.	Places for people to meet and gather. Contribution to health through diet and exercise. Managing rights of way within agricultural areas to facilitate public access.
FLOOD ATTENUATION AND WATER RESOURCE MANAGEMENT	Reduced economic and insurance risk in light of enhanced water resource management.	Opportunities for education and interpretation in relation to wetland - understanding of place and context.	Opportunities to provide enhanced landscape setting and to relate riparian development to place and context.	Opportunities to create and restore wetland habitats.	Opportunities to link and create new wetland habitats.		Opportunities for access to water for informal and formal recreation activities, and community involvement in conservation work.	Decreased risks of flooding reduce psychological costs/impacts on communities living in vulnerable areas.
COUNTERING THE ‘HEAT ISLAND’ EFFECT OF URBAN AREAS	Green economy, including making attractive and comfortable places for living and working. Potential for more economically efficient buildings, through green roofing and associated insulation.		Opportunities for provision of shading and cooling to restore and enhance landscape character and biodiversity (such as new tree, woodland and meadow planting, and also through green roofs and green walls).	Opportunities to provide habitat connectivity to assist species migration. Opportunities for planting of native species during urban tree planting programmes to provide urban cooling.	Opportunities for tree planting for carbon sequestration. Opportunities for creation of microclimates through structural landscape planting.	Providing greenways/traffic free routes to promote more local journeys on foot/cycle and therefore reduce the need for car use in urban centre.		Physical and psychological benefits.

key
Government Policy Priorities
GI Functions
GI Benefits

Ecosystem Services

- 4.2.12 The concept of 'ecosystem services' is an integral element of the overall green infrastructure approach. An ecosystem is a natural system that comprises of living (plants, animals and microbes) and non-living elements and their interactions. Through these interactions, ecosystems provide essential life-support products and services for human well-being, including basic material needs such as food and water. These comprise 'provisioning' services (e.g. food and energy crops production); 'regulating' services (e.g. flood control, water purification, air quality maintenance and pollination processes); 'cultural' services (e.g. non-material benefits that people obtain from the natural environment); and 'supporting' services (services necessary for the production of all other ecosystem services - e.g. nutrient recycling and soil formation processes).
- 4.2.13 The potential of green infrastructure to provide for mitigation of and adaptation to climate change, including the migration of species, is relevant in this context. For example, the European Union's Climate Change Programme recognises that climate change will significantly affect economies and societies through its impacts on ecosystems. It also emphasises that healthy ecosystems will be more resilient to climate change, and thus be more capable of maintaining the supply of ecosystem services on which human prosperity and well-being depend.

4.3 Green Infrastructure Delivery Principles

- 4.3.1 The strategic aims of the Green Infrastructure Strategy for Grantham are to:
- Inspire businesses and decision makers to support investment in green infrastructure by recognising its vital role in improving the lives, livelihoods and health of local communities in Grantham;
 - Promote deeper understanding of the economic, environmental and social benefits of green infrastructure, including the provision of ecosystem services that are essential for human well-being and
 - Provide a co-ordinated, strategic approach to delivery and management of a multi-functional, high quality Green Infrastructure Network that reflects local needs.
- 4.3.2 The Green Infrastructure Strategy proposes that delivery of a multi-functional, high quality Green Infrastructure Network for Grantham will best be achieved by the various different organisations and stakeholders adopting a common approach. In this context, the following overarching principles have been developed to provide a foundation for guiding decision-making in relation to future green infrastructure provision in and around Grantham:

Green Infrastructure Delivery Principles

1. **Safeguard** the integrity of the green infrastructure network through protection, enhancement, creation and management of high quality green spaces, and provide a net increase in biodiversity.
2. **Strengthen** the multi-functionality and connectivity of the existing green infrastructure network by creating new green spaces/links that connect the town centre, urban fringe and wider countryside.
3. **Secure** resources to ensure sustainable and long-term management/maintenance of high quality green spaces in order to continue delivering benefits for future generations.
4. **Celebrate** successful green infrastructure projects and ensure that good practice is widely disseminated and promoted.
5. **Adapt** to and mitigate against the effects of climate change through innovative green infrastructure design solutions, including sustainable water management and urban cooling measures.
6. **Retrofit** green infrastructure into established built environments within Grantham and the surrounding villages.
7. **Embed** green infrastructure into the design and layout of new developments/growth areas alongside the masterplanning of the built environment and grey infrastructure.
8. **Sustain** the local character of Grantham by managing townscape and landscape change to protect and enhance sensitive features, including cultural heritage assets.
9. **Reverse** the decline in biodiversity through investment in ecological networks of new and enhanced habitats to reduce fragmentation and increase potential for species dispersal.
10. **Deliver** lasting benefits for local people in terms of social inclusion, community development and lifelong learning.

4.3.3 These principles are reflected in the Green Infrastructure Guide for the East Midlands (2008).

5.0 THE GREEN INFRASTRUCTURE NETWORK

5.1 General

5.1.1 This section sets out the proposed Green Infrastructure Network for Grantham, which reflects the overarching concepts set out in **Section 4.0** and provides a strategic framework for guiding investment in green infrastructure implementation and delivery.

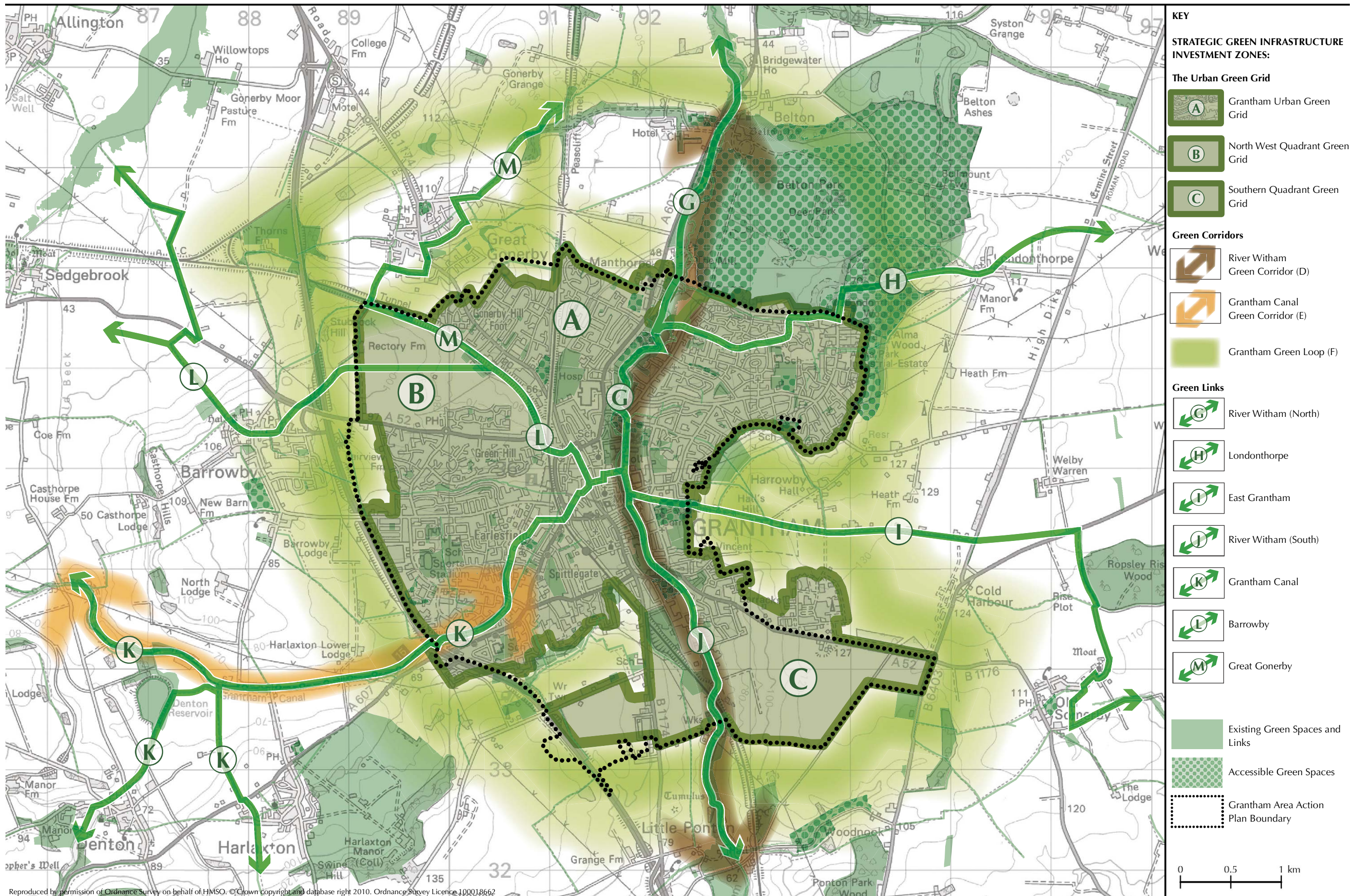
5.2 Setting Priorities for Green Infrastructure Investment

5.2.1 Investment in a connected and multi-functional network of high quality green spaces and links in and around Grantham is necessary to support sustainable development objectives. The analysis of green infrastructure assets, needs and opportunities set out in **Section 2.0** provides the evidence base for developing the Green Infrastructure Network, which is based on the existing green spaces and links shown on **Figure 2.20**.

5.2.2 The proposed Green Infrastructure Network for Grantham is illustrated on **Figure 5.1**. It encompasses a hierarchy of green spaces and links, in terms of location, function, size and levels of accessibility/use, and operates at every spatial scale and all geographic areas within Grantham, the surrounding villages and countryside.

5.2.3 The spatial representation of the overall Green Infrastructure Network is illustrated through corridors and linkages, which together provide a 'bigger picture' for the delivery of green infrastructure. It is intended to help focus attention or priority on land that needs to be safeguarded, managed or secured in positive ways to create a multi-functional network of green spaces and links for which investment can deliver the greatest range of benefits. It is not a rigid approach. The Green Infrastructure Network is intended to be flexible and responsive to opportunities - such as changing land ownership, community aspirations, access to funding, development opportunities, policy considerations, etc - that may change priorities for investment over time.

5.2.4 The green infrastructure concept applies across the whole of the area, and it can operate at any scale. However, the proposed Green Infrastructure Network identifies locations where targeting investment in green infrastructure is most likely to deliver multiple benefits across a range of key environmental, social and economic policy areas. The main considerations in steering investment priorities are:



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FIGURE 5.1
The Proposed Green Infrastructure Network for Grantham

- To focus investment on green infrastructure provision and management to address current deficits of provision/needs;
- To meet the green infrastructure needs of communities in and around the town who are likely to experience major growth-related pressures in the period to 2026; and
- To protect, enhance and manage existing valuable green infrastructure assets that are under current or future pressure, in particular accessible natural greenspaces, biodiversity sites, heritage features and watercourses.

5.2.5 In response to the above, broadly defined ‘**Strategic Green Infrastructure Investment Zones**’ are indicated on **Figure 5.1**, within which it is recommended that investment in new and enhanced green infrastructure provision be prioritised and delivered over the next 15-20 years or so. These zones reflect the identified needs and opportunities for enhancing the connectivity and accessibility of the green space network for biodiversity and public benefit. They provide the context for development of green infrastructure initiatives and projects that would provide, in many cases, multiple functions and benefits to meet a range of needs. Green infrastructure related proposals within and adjacent to the zones would focus on the enhancement and restoration of existing green infrastructure assets, as well as the creation of new resources. These locations are considered to offer greatest opportunity to maximise the social, economic and environmental benefits from green infrastructure for the town as it grows.

5.3 Overview of the Green Infrastructure Network

5.3.1 The proposed Green Infrastructure Network illustrated on **Figure 5.1** encapsulates a range of green spaces and linkages within a varied townscape and landscape setting. With investment over time, the Green Infrastructure Network will offer more diverse uses, experiences and functions to deliver increased economic, environmental and social benefits for the Grantham area. These include:

- Linking housing, schools and the bus/train station to the access network and connecting with accessible green spaces in the wider countryside;
- Providing an improved image, experience and sense of place through investment in an improved environmental quality for the public realm;
- Contributing to health improvements and well-being through schools, hospitals and health centres promoting opportunities to access green spaces for exercise;
- Opportunities to provide environmental education through parks, nature reserves and farm-based activities;
- Helping address climate change through sustainable management of waste, water and pollution, production of energy crops and creation of woodland to act as carbon sinks;
- Recognising the role of farmland surrounding the town in food production, processing of local produce and farm shops;
- Increasing awareness of, and celebrating, historic features in the urban fringe landscape and how they contribute to sense of place for Grantham’s local communities;

- Ensuring that future urban extensions link with the town, and address issues such as fly-tipping, indistinct boundaries, poor accessibility, fragmented landscapes, etc;
- Providing opportunities for local community involvement through volunteering and gaining new skills through green infrastructure project delivery, particularly within deprived communities; and
- Strengthening biodiversity conservation management for sites in and around the town.

5.3.2 In summary, the Green Infrastructure Network encompasses three main spatial components:

- **The Urban Green Grid.**
- **Green Corridors.**
- **Green Links.**

5.3.3 The principal functions of each of these components within the overall Green Infrastructure Network are outlined below.

The Urban Green Grid

5.3.4 At the heart of the Green Infrastructure Network is the Urban Green Grid. This comprises a matrix of green spaces and access links threading through the established built environment and the planned urban extensions, weaving together the areas where people live and work with public transport networks and the wider countryside. The Urban Green Grid provides urban communities with green areas for recreation and wildlife, a sense of place, education opportunities, and helps to contribute to sustainable travel by providing safe routes for walking and cycling. As illustrated on **Figure 5.1**, the Urban Green Grid encompasses three spatial components:

- **Grantham Urban Green Grid** (the established built environment);
- **North West Quadrant Growth Area Green Grid** (planned urban extension); and
- **Southern Quadrant Growth Area Green Grid** (planned urban extension).

Green Corridors

5.3.5 A network of broad Green Corridors in and around the town provides the backbone of the overall Green Infrastructure Network. They are broadly defined corridors comprising a mosaic of land uses, natural, built heritage and archaeological resources and settlements, and are intended to become fully multi-functional zones with the ability or potential to deliver a range of economic, environmental and social benefits related to the seven green infrastructure functions. These corridors are significant green infrastructure assets for the town, and also provide key strategic linkages with green infrastructure networks at the District and Sub-regional level. Three Green Corridors are proposed:

- **River Witham Green Corridor** – a north-south ‘green spine’ for the town linking with Belton Park to the north and the Southern Quadrant growth area;
- **Grantham Canal Green Corridor** – a multi-functional corridor linking the town centre to countryside destinations in the west, extending into Leicestershire and Nottinghamshire; and
- **Grantham Green Loop** – a broad corridor of interlinked and multi-functional green spaces in the countryside surrounding the town, providing connectivity with the town centre, public transport nodes and employment/residential areas (including the growth areas).

5.3.6 The width of the Green Corridors illustrated schematically on **Figure 5.1** are indicative; they are not intended to be rigid, and should be responsive to local circumstances. For example, it will be important for the Green Corridors to, wherever possible, provide adequate space in order to reduce the potential negative “edge effects” on wildlife from surrounding intensive land uses by buffering and extending existing valuable habitats.

5.3.7 The ‘Green Loop’ corridor includes the parkland associated with Belton House. The parkland affords a substantial area of accessible natural greenspace that is normally available for public access on foot, providing opportunities for open access for informal recreation activities. It is important that strategic access improvements to the wider green infrastructure network are appropriate to the heritage significance and sensitivities of the Park, and are in accordance with National Trust management objectives and bye-laws.

Green Links

5.3.8 Within and connecting the Urban Green Grid and Green Corridors, a network of Green Links will provide safe and direct multi-use off-road routes for pedestrians and and cycle users, linking and integrating residential and business communities across the area to key services, leisure destinations and green spaces. The proposed Green Links are:

- **River Witham (North) Green Link** – linking the town centre to Belton Park;
- **Londonthorpe Green Link** – linking the town centre via the River Witham to Londonthorpe Wood and the village of Londonthorpe;
- **East Grantham Green Link** – linking the town centre to the countryside east of Grantham and the village of Old Somerby;
- **River Witham (South) Green Link** – linking the town centre to the Southern Quadrant Growth Area and the village of Little Ponton;
- **Grantham Canal Green Link** – linking the town centre to the villages of Harlaxton, Denton and Woolsthorpe;
- **Barrowby Green Link** – linking the town centre via the North West Quadrant Growth Area to the villages of Barrowby, Sedgebrook and Allington; and
- **Great Gonerby Green Link** – linking the town centre via the North West Quadrant Growth Area to the village of Great Gonerby.

- 5.3.9 With investment, the Green Links have the potential to link with public transport services to provide an integrated sustainable movement network for Grantham that will help reduce reliance on car-use. The Green Links reflect the priority for achieving a connected network of green spaces between the town and the surrounding countryside. While the Green Links have the primary function of providing access and recreational route linkages, they also offer opportunities for biodiversity enhancement.
- 5.3.10 The alignment and width of the Green Links illustrated on **Figure 5.1** are indicative, and their specific configuration should respond to their intended uses and local circumstances.

Integrity of the Green Infrastructure Network

- 5.3.11 It will be important to ensure that the integrity of the overall Green Infrastructure Network is not compromised by inappropriate development and land management. This means that there needs to be flexibility in how the Green Infrastructure Network is protected and managed. In cases where there is an unavoidable need to trade off existing green infrastructure assets to meet social and economic needs, this should be offset by mitigation and compensation measures to enhance the functionality of other green infrastructure assets elsewhere within the Green Infrastructure Network. However, some habitats, such as ancient woodlands, are irreplaceable and need protection. Where development is planned within or in close proximity to a green infrastructure corridor, it should become an integral feature to the design and 'identity' of the development site to ensure that the connectivity of the network for both public benefit and biodiversity is retained and enhanced. This approach is reflected in the development guidelines set out in **Section 7.0**.

Green Infrastructure in the Wider Study Area

- 5.3.12 While the proposed Green Infrastructure Network focuses particular attention on strategic priorities within the zones defined on **Figure 5.1**, investment in green infrastructure provision within the wider study area that may have potential to deliver benefits should also be considered where appropriate. In these areas, targeted environmental and access improvements are envisaged to strengthen the Green Infrastructure Network.
- 5.3.13 These improvements would complement and support the priority areas for investment within the Green Infrastructure Network by focusing environmental land management schemes on addressing needs and opportunities identified in **Section 2.0** for increasing the multi-functionality of the countryside. These aims could be achieved, for example, through schemes for:
- Conservation and enhancement of landscape character;

- Enhanced management, protection, accessibility and interpretation of the historic environment and geodiversity resources;
- Habitat enhancement, linkage and creation, particularly farmland BAP habitats and species;
- Enhanced connectivity of the local rights of way network to the strategic access route network (including public transport) and to accessible green spaces to promote sustainable modes of travel; and
- Productive landscapes, involving sustainable local food and renewable energy crops.

6.0 IMPLEMENTATION STRATEGY

6.1 General

6.1.1 This section outlines the proposed Implementation Strategy for delivery of the Green Infrastructure Strategy. It identifies delivery mechanisms and potential funding sources, and suggests a range of green infrastructure projects which are supported by an 'outline' action plan to guide project delivery. The action plan includes an estimate of indicative costs required to take forward the delivery of the green infrastructure projects.

6.2 Delivery Co-ordination Arrangements

6.2.1 A concerted effort over a long period is necessary to ensure that green infrastructure is planned, delivered and managed to fully meet the needs of existing and new communities; protect and enhance the environment (including biodiversity, landscape and heritage); address the challenges of climate change; and underpin the economic stability and growth of the town. Priorities for successful planning, delivery and management of green infrastructure include:

- Championing the importance, benefits and principles of green infrastructure to a wide audience – including the public, private and voluntary sectors;
- Influencing and enabling delivery of green infrastructure;
- Marketing and advocacy to promote green infrastructure;
- Identification and selection of green infrastructure projects for funding;
- Establishing partnerships for the funding, delivery, management and ownership of specific green infrastructure projects;
- Identifying and disseminating information on best practice approaches to green infrastructure delivery; and
- Liaising with neighbouring areas to co-ordinate cross-boundary delivery of projects at the sub-regional scale.

6.2.2 A co-ordinated approach is critical to achieving the above. It is therefore recommended that consideration is given to establishing a **Grantham Green Infrastructure Strategy Implementation Group** to drive forward delivery of green infrastructure in the growth point. The key roles of the Group would be to:

- Lead in the establishment and long term maintenance of high quality green infrastructure, contributing to the development of sustainable communities;
- Champion green infrastructure across the growth point, including ensuring that best practice with regards to implementation and long-term maintenance of green infrastructure is adopted;

- Source funding for implementation of the Green Infrastructure Strategy, and advise on budgets for capital and revenue expenditure on green infrastructure;
- Monitor the implementation of green infrastructure, promoting good practice and reporting on annual progress to strengthen the overall green infrastructure network;
- Ensure that green infrastructure is fully integrated and has a high profile within the wider work of the local authorities;
- Promote, disseminate and give assistance and advice on the integration of green infrastructure and the Green Infrastructure Strategy into plans, policies and programmes, including Sustainable Urban Extension masterplanning; and
- Assist partner organisations in prioritising action on green infrastructure that will deliver high quality and sustainably managed green infrastructure.

6.2.3 It is recommended that membership of the Group includes senior officers from organisations with prime responsibility for strategic planning and delivery of green infrastructure in the growth point, and that it is chaired by a senior representative from one of the member organisations. It is suggested that the initial membership of this Group might include:

- South Kesteven District Council;
- Lincolnshire County Council;
- Natural England; and
- Environment Agency

6.2.4 There is a clear need for a strong 'Green Infrastructure Champion' to advocate strategic and coordinated planning and delivery of green infrastructure as there is no mainstream funding for green infrastructure. It is proposed that one of the organisations with a national remit would be well placed to perform this role. It is also recommended that consideration is given to establishing a **Grantham Green Infrastructure Strategy Implementation Coordinator** to support the Group's work.

6.2.5 Other local organisations with an interest in green infrastructure provision and management in the growth point should also be encouraged to make input to the work of the Green Infrastructure Strategy Implementation Group. It is suggested that this is facilitated through a wider **Grantham Green Infrastructure Strategy Stakeholder Reference Group**, whose expertise is drawn upon as appropriate in relation to particular technical aspects of green infrastructure, or with regards to project delivery within specific geographical areas. These organisations might include for example:

- National Trust;
- Country Land and Business Association;
- Parish Councils;
- Town Councils;
- Grantham Canal Partnership;
- Grantham Canal Restoration Society;
- Lincolnshire Wildlife Trust;

- English Heritage;
- Lincolnshire Gardens Trust;
- Grantham Civic Society;
- Grantham River Care Group;
- Wyndham Park Forum;
- Friends of Wyndham Park; and
- British Waterways

6.2.6 At the local level, it is important that appropriate delivery mechanisms are in place that focus on community-scale involvement and long-term maintenance of green spaces. Local partnerships should be encouraged to deliver small-scale green infrastructure projects to secure community engagement in long-term, locally-based site management.

6.2.7 There is also a strong need to establish arrangements for identifying opportunities and facilitating partnerships with the private sector to deliver green infrastructure, including promoting the funding and delivery of green infrastructure through developer contributions associated with development. It is therefore suggested that consideration is given to establishing **Sustainable Urban Extension Green Infrastructure Working Groups** to provide a forum for the relevant stakeholders to work in partnership with the respective developers in embedding high quality green infrastructure into site masterplans.

6.2.8 The long-term plan for green infrastructure set out in this document has an important role to play in coordinating effective action in the context of the wide range of different funding sources and partners. The long term approach is also of value as the Green Infrastructure Network is likely to be delivered incrementally, facilitated by, and in step with, major development. To support implementation of the overall Green Infrastructure Strategy, it is recommended that a **Green Infrastructure Business Plan** is developed and reviewed annually to provide a mechanism for considering potential sources of funding for green infrastructure delivery and management.

6.3 Potential Funding Sources

6.3.1 Reflecting the multi-dimensional nature of green infrastructure, and the potential for multiple social, economic and environmental benefits, there is a range of funding streams for securing the implementation of green infrastructure. The most relevant of these are highlighted below.

Potential Funding Sources

6.3.2 As set out in the Grantham Growth Point 2007 Programme of Development, funding from the dedicated ‘single pot’ **Growth Point Fund** has been allocated to investment in green infrastructure to help meet the increased demands generated by the growth agenda for the

town. This has included funding for the development of guidance to encourage investment in green infrastructure initiatives and for capital expenditure on local green infrastructure projects. Going forward, the continued availability of public funding, in conjunction with contributions from developers and other sources, will be critical for delivering the scale of investment in green infrastructure projects that is required to support sustainable growth of the town.

6.3.3 Funding for delivery of green infrastructure related to individual developments may be secured from **developer contributions** provided in line with Policy SP4 of the Council's adopted Core Strategy. This policy enables the Council to require developers to provide (or make financial contributions towards) infrastructure and community benefits which the Council considers necessary in conjunction with development, secured either through a planning obligation or payment of a Community Infrastructure Levy charge. The types of green infrastructure related community benefits which the Council may pursue through planning obligations include, for example: improvements to cycleways and pedestrian routes; improvements to and provision of green spaces for recreation, social, leisure, health and education purposes; maintenance of small areas of green space or landscaping principally of benefit to the development; conservation and or provision of land and water for nature conservation and amenity; and conservation of buildings, structures and places of historic or architectural or archaeological interest; and provision of art or sculpture in public places.

6.3.4 However, it should be noted that over-reliance on developer contributions may not result in the anticipated funding in the current economic climate. In these circumstances, a creative approach to the use of public and private sector grants and funding should also be adopted by SKDC and its key delivery partners, which includes consideration of the following **major potential sources of funding** that may be available to support green infrastructure provision:

- **Access to Nature** is a grant scheme for improving existing green spaces for local communities funded by the Big Lottery Fund (BLF) and run by Natural England;
- **Heritage Lottery Fund (HLF)** aims to provide funding for projects that conserve and enhance heritage assets, and provides grant support through four main schemes (Heritage Grants, Townscape Heritage Initiative, Parks for People and Landscape Partnerships);
- **Aggregates Levy Sustainability Fund (ALSF)** was introduced to reduce the environmental impact of aggregate extraction and promote a more sustainable and environmentally friendly way of mineral extraction and waste management. Availability is restricted to areas affected by aggregates extraction, but some funding is obtainable in conjunction with award partners such as Natural England;
- **Higher Level Stewardship** can provide focused and enhanced grant support for farmers and land managers that will deliver green infrastructure priorities such as landscape, access and biodiversity enhancements and habitat connectivity;
- **European Union Funding** such as the LEADER Programme which is a source of funding for farmers, foresters, rural businesses and community organisations provided as part of the Rural Development Programme for England, and the INTERREG IVB programme;

- **Forestry Commission English Woodland Grant Scheme** provides funding for woodland creation, biodiversity enhancement and access through a challenge fund; and
- **Landfill Tax Communities Fund** distributes grants to community projects using funding generated from landfill taxes in the UK to help mitigate the effects of landfill upon local communities, such as the Local Landscapes programme for transforming derelict areas into new green spaces for local communities delivered by WREN.

6.3.5 In addition, **other potential sources of funding** that may be available to support green infrastructure provision include:

- **Small-scale community grants** which provide funding for community-based environmental projects in support of strategic green infrastructure objectives, such as the Big Lottery Fund's 'Community Spaces' environmental programme delivered by Groundwork UK, and Sport England's Community Investment Fund;
- **Private sector funding** can play a key role in securing the future of community green space as part of meeting corporate social responsibility objectives, such as Marks & Spencer's 'Greener Living Spaces' funding programme for transforming derelict and underused open space into new community facilities delivered by Groundwork;
- **Public/third sector green space land managers** such as the District Council, County Council, Town and Parish Councils, Forestry Commission, National Trust, County Wildlife Trust, Groundwork, BTCV, etc;
- **Primary Care Trust** funding linked to the health agenda such as the Walk Your Way to Health initiative; and
- **Safer Neighbourhood funding streams** linked to using green infrastructure to tackle, for example, anti-social behaviour and providing safe routes for communities.

6.3.6 Potential **sources of advice** that may be available to support green infrastructure provision include:

- **Provision of Green Infrastructure delivery advice and support for farmers and landowners** such as the Farming and Wildlife Advisory Group, National Trust, Natural England, Royal Society for the Protection of Birds, Lincolnshire Wildlife Trust, etc; and
- **Advice and support on Green Infrastructure delivery issues from Government agencies and NGOs** such as Natural England, English Heritage, Environment Agency, Sport England, Sustrans, Land Trust, etc.

6.3.7 It is important to note that this list is not exhaustive, and other sources of funding, support and advice may be available now and in the future. Further details of green infrastructure funding and governance models are provided in Appendix 3 of Natural England's Green Infrastructure Guidance (2009)¹⁰².

¹⁰² <http://naturalengland.etraderstores.com/NaturalEnglandShop/Product.aspx?ProductID=cda68051-1381-452f-8e5b-8d7297783bbd>

6.4 Greenspace Management and Maintenance

6.4.1 It is widely acknowledged that securing revenue funding for the management of capital green space schemes is difficult, and will become even more so in the future within the present economic climate. It is important that sustainable management and funding is established up front at the planning stage of a capital scheme to ensure its long-term delivery of green infrastructure benefits.

6.4.2 Research¹⁰³ has identified that ‘traditional’ approaches to the long-term management and maintenance of green space are no longer sufficient on their own, and that new thinking is required to identify and develop alternative models and mechanisms which provide more reliable or more permanent solutions. This research suggests that generating revenue and engaging communities are fundamental prerequisites for ensuring the sustainability of green spaces.

6.4.3 There are a number of options that may be relevant for the delivery and future management of green space. The main options are management by:

- Local Authorities;
- Existing or new Charitable Trusts;
- Management Companies;
- Partnerships;
- Voluntary and Public/Private Sector Agreements;
- Community Interest Companies; and
- Social Enterprises.

6.4.4 Each of the options has advantages and disadvantages, and the option that is the most appropriate for the management of a particular green space will vary depending on the characteristics of the site itself and proposed use of the green space; arrangements for long term finance and income streams; organisational capacity; and the attitude and intentions of the landowner. Whichever option, or combination of options, is selected it is particularly important that all parties have a positive, pro-active and co-operative approach to the creation, management and maintenance of the green space, both in the short and the long term and that the local authorities adopt a corporate approach.

6.4.5 There is a need to ensure that there is an adequate funding arrangement in place, including long term security of income, and to agree what the funding is expected to cover. A package of financial arrangements may be preferable rather than relying on one option. The greatest scope for providing on-going revenue for long-term green space management is considered to

¹⁰³ Sustaining Green Space Investment – Issues, Challenges and Recommendations (Groundwork UK, February 2006).

be those mechanisms that, either alone or in combination, best capture and articulate the wider outcomes achieved through maintaining high quality and accessible Green Infrastructure. Innovative approaches also have the potential to encourage businesses to fund environmental improvements of local green spaces that contribute to their trading environments. For example, local management agreements with private sector companies, imaginative use of developer contributions, and the inclusion of green space management funding in business improvement initiatives.

- 6.4.6 Based on investigations from around the world, CABE Space's 'Paying for Parks: Eight models for Funding Urban Green Spaces' recommends models for both revenue and capital funding that could be used in England¹⁰⁴.

6.5 Strategic Delivery Mechanisms

- 6.5.1 Many of the opportunities to deliver improved or extended green infrastructure lie not only with the Council, but also with other partners. For example, providing cycle routes within green links could help to meet objectives within a Local Transport Plan for more sustainable travel and objectives within a local health strategy to increase the amount of exercise taken by local people. In this respect, it is important that green infrastructure objectives are embedded in the following strategic mechanisms that have a key role to play in the planning and delivery of green infrastructure.

Sustainable Community Strategy

- 6.5.2 The Lincolnshire Sustainable Community Strategy (SCS) is the overarching strategy for promoting and improving the health and well-being of local communities in Lincolnshire to 2030. Green infrastructure is embedded into the SCS, which states: *'By conserving, restoring, recreating and reconnecting wild places - rebuilding biodiversity - wildlife will be helped to adapt to climate change. In turn, our healthy, living landscapes will provide us with 'ecosystem services', such as reduced risk of flooding, as well as accessible natural green space in which to relax, remain healthy, exercise and gain spiritual refreshment. Re-establishing, safeguarding and enhancing green infrastructure will benefit people and wildlife.'*

The Planning System and Green Infrastructure Provision

- 6.5.3 The Local Development Framework provides a key mechanism for delivery of green infrastructure. The strategic vision, objectives and policies of the adopted **South Kesteven Core**

¹⁰⁴ www.cabe.org.uk/publications/paying-for-parks.

Strategy are generally supported by the proposed Grantham Green Infrastructure Strategy. The Green Infrastructure Strategy is intended to provide a key part of the evidence base for informing the policies and proposals in the emerging **Grantham Area Action Plan**, and also underpin the implementation of the Plan over the period to 2026.

- 6.5.4 In addition, the development management or control process also affords considerable potential to promote and deliver green infrastructure. Most significant development and land use change requires planning permission, and large-scale proposals often present the greatest opportunities for green infrastructure enhancement and challenges for protection of existing green infrastructure assets. Specific green infrastructure requirements will vary considerably according to the application. Individual planning applications can contribute to green infrastructure delivery by increasing functionality of green infrastructure through the protection, restoration and enhancement of existing green infrastructure assets, creation of new green infrastructure and by the linking of green infrastructure assets.
- 6.5.5 **Section 7.0** provides guidelines for embedding green infrastructure into new development schemes, including standards for the quantity, quality and accessibility of green space provision. These guidelines are intended to be of value for developers, residents and planners in helping inform pre-application discussions and consultations, evaluation of planning applications and implementation of developments.

Greenspace Management and Maintenance Quality

- 6.5.6 The Green Infrastructure Strategy also aims to encourage high quality greenspace management and maintenance standards, and investment in new or improved green infrastructure should be supported by a long-term commitment to its maintenance. Recent research¹⁰⁵ has highlighted the shortage of landscape architectural and horticultural skills in the greenspace management and maintenance sector in England. Additionally, the availability of adequate resources for maintaining the quality of publicly accessible greenspaces continues to be a significant challenge for local authorities throughout the country.
- 6.5.7 'Towards an Excellent Service for Parks and Open Spaces'¹⁰⁶ is a framework developed by CABESpace, the Institute for Sport, Parks and Leisure (ISPAL) and the Improvement and Development Agency (IDeA) to enable greenspace management organisations to benchmark their service against a model of excellence and plan improvements.

¹⁰⁵ www.cabe.org.uk/files/green-space-skills-2009.pdf.

¹⁰⁶ <http://www.idea.gov.uk/idk/core/page.do?pageld=8722765>.

6.6 Green Infrastructure Projects

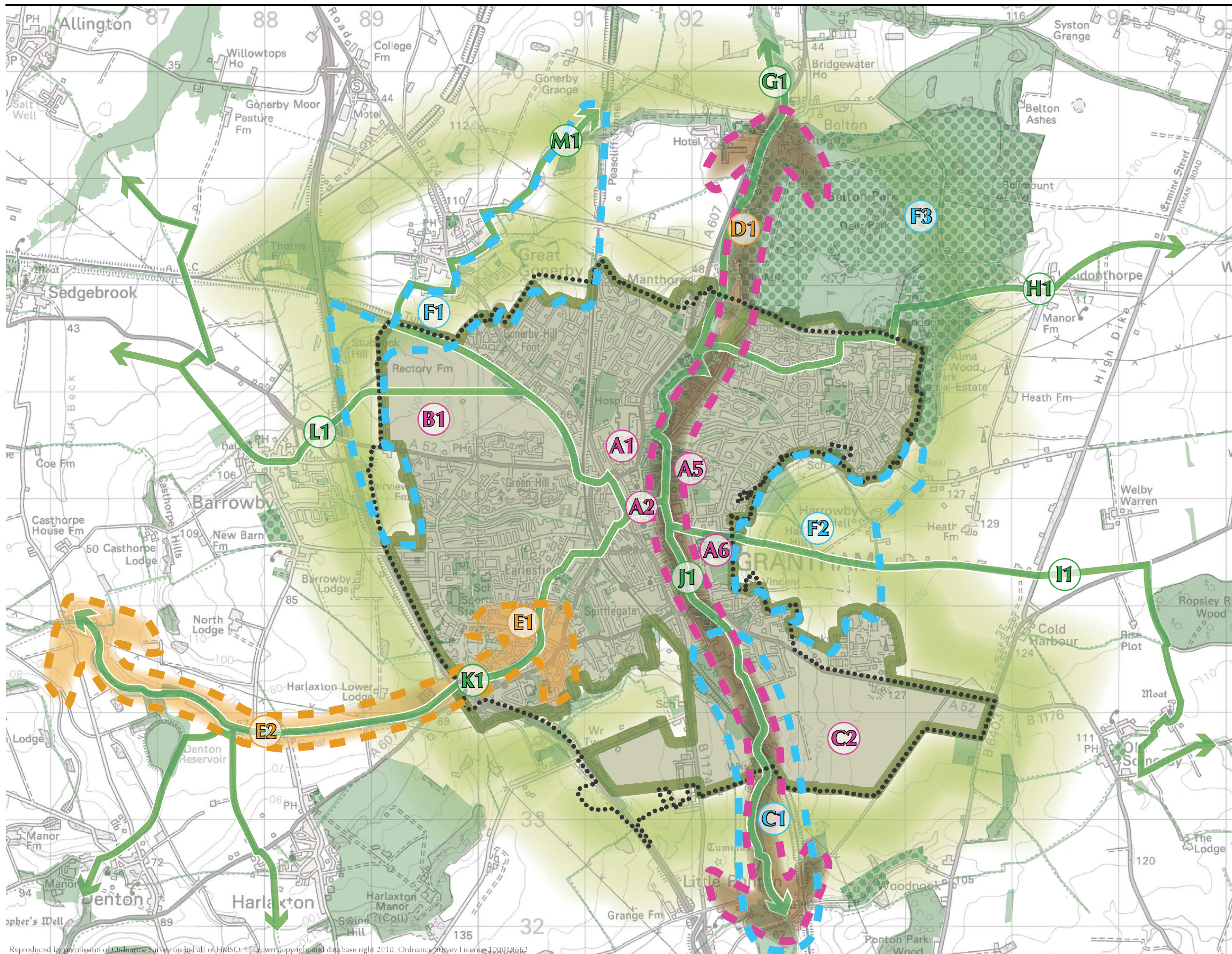
- 6.6.1 In light of the proposed Strategy set out in **Sections 4.0** and **5.0**, it is recommended that priority is given to delivering projects for enhancing, extending and connecting the existing network of green spaces to strengthen the functionality of the Green Infrastructure Network for Grantham within the **Strategic Green Infrastructure Investment Zones** indicated on **Figure 5.1**. These are the broad locations where targeting investment in green infrastructure is considered to deliver multiple benefits for Grantham across a range of key environmental, social and economic priority policy areas.
- 6.6.2 A Green Infrastructure Guide and Toolkit has been recently developed by the East Midlands Development Agency (emda) to support green infrastructure projects in the East Midlands¹⁰⁷. The Toolkit explains the rationale for investment in green infrastructure and offers a consistent evaluation and assessment framework to help with decision making in relation to the development, delivery, monitoring and evaluation of green infrastructure projects. The approach set out in the Toolkit is relevant to a range of existing funding streams, and is also likely to remain relevant as and when new funding streams and investment programmes come on board.
- 6.6.3 Based on the analysis of needs and opportunities for enhanced provision of particular elements of green infrastructure presented in **Sections 2.0** and **3.0**, a range of green infrastructure projects are suggested as a starting point to support the sustainable regeneration and growth of Grantham over the next 15 years. The existing and proposed projects set out in **Table 6.1** seek to maximise the multifunctional nature of the Green Infrastructure Network as a whole. They are designed to provide, in combination, a mosaic of primary and complementary secondary functions that would deliver the greatest green infrastructure benefits for Grantham.
- 6.6.4 Other projects of a more local nature, both within and beyond the Strategic Green Infrastructure Investment Zones should also be considered where they would help bridge crucial gaps or provide strategically placed 'stepping stones' in the Green Infrastructure Network, and where the potential to deliver significant multiple benefits across a wide range of green infrastructure functions can be demonstrated. Green infrastructure projects that are intended to deliver only limited or single benefits should not be discounted, as these may be crucial in achieving specific aims and objectives for green infrastructure and can help support more multifunctional projects.

¹⁰⁷ <http://www.emda.org.uk/environment/default.asp>

6.6.5 Where appropriate, the data sources identified in **Appendix F**, plus other relevant sources of data related to the natural and historic environment (such as the Lincolnshire Historic Environment Record and the English Heritage National Monument record for example) should be used to inform more detailed green infrastructure work and projects.

6.6.6 **Table 6.1** contains the following information:

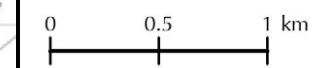
- **Project Ref/Name:** The unique reference number for the project (see **Figure 6.1** for location of green space and links projects). In the case of proposed projects, their names have been suggested as working titles for the purposes of this Strategy.
- **Green Infrastructure Functions:** The functions that each green infrastructure project is designed to provide or enhance are indicated as follows:
 - * **Activity** - access, recreation, movement and leisure
 - * **Biodiversity** - habitat provision and access to nature
 - * **Sense of Place** - landscape setting and context for development
 - * **Sustainability** - energy production and conservation
 - * **Local Produce** - food production and productive landscapes
 - * **Hydrology** - flood attenuation and water resource management
 - * **Climate Control** - countering the 'heat island' effect of urban areas
- **Need:** A concise summary of the identified need for the project.
- **Status:** The status of the green infrastructure project is identified as 'Existing' or 'Proposed'.
- **Project Description:** An outline summary description of the general scope of the green infrastructure project.
- **Ward:** Reference number of relevant Ward(s) as per **Figure 2.1**.



- KEY**
- Urban Green Grid Projects:**
- A1. Heritage and Environmental Trail
 - A2. The Green Mile
 - A5. Greater Wyndham Park
 - A6. Harrowby Road Cemetery
 - B1. NW Sustainable Urban Extension Green Grid
 - C1. Southern Grantham Community Park
 - C2. Southern Sustainable Urban Extension Green Grid
- Green Corridor Projects:**
- D1. Witham Riverpark
 - E1. Grantham Canal Basin
 - E2. Grantham Canal Corridor
- Green Loop Projects:**
- F1. NW Grantham Urban Fringe Community Parklands
 - F2. East Grantham Urban Fringe Community Parklands
 - F3. Belton Park Management
- Green Link Projects:**
- G1. River Witham (North) Greenway
 - H1. Lodonthorpe Greenway
 - I1. Tumor Road to Ropsley Rise Wood Gap
 - J1. River Witham (South) Greenway
 - K1. Grantham Canal Greenway Gap
 - L1. Barrowby Greenway
 - M1. Great Gonerby Greenway

See Table 6.1 for full list of Projects

- Existing Green Spaces and Links
- Accessible Green Spaces
- Proposed Areas of Search for Accessible Green Spaces (Community Parklands)
- Grantham Area Action Plan Boundary



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Table 6.1 - Green Infrastructure Projects

Project Ref/ Name	GI Functions	Need	Status	Project Description	Ward
Grantham Urban Green Grid Projects					
A1. Heritage and Environmental Trail (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Sense of Place • Sustainability 	Project identified by the District Council to improve the quality of Grantham's urban environment and increase connectivity between key areas and facilities of the town centre.	Proposed	The trail will offer a network of multi-functional pedestrian/cycle routes linking key sites within the historic town centre and connecting urban green spaces to encourage residents and visitors to explore the heritage and enjoy the facilities of the town. The Trail will link a 'heritage zone' focussed on historic buildings/townscape around Castlegate; a 'cultural zone' focussed on the Guildhall/The Green; a 'retail/night-time zone' focussed on the George Centre/Westgate/High Street/Market Place; and a 'natural zone' focused around the River Witham/Wyndham Park and Sedgwick Meadows. The Trail will have clear signage/way-marking using contemporary and possibly interactive features at focal/arrival points, and include seating, public toilets and cycle storage. See also Project A2 – The Green Mile.	8, 9, 10, 14, 15, 16
A2. The Green Mile (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place • Sustainability • Climate Control 	Project identified by the Draft Grantham Town Centre Masterplan (2007) to improve the quality of Grantham's urban environment and increase connectivity between key areas and facilities of the town centre.	Proposed	Provision of a safe, direct, ecologically and visually interesting pedestrian/cycle route between Wyndham Park and the Canal Basin, linking two sections of the National Cycle Network that pass through the town centre. It will include high quality and contemporary public realm treatments as well as sustainable building design. Forms key spine of the Heritage and Environmental Trail (Project A1).	8, 9, 10, 15
A3. Grantham Walking and Cycling Network	<ul style="list-style-type: none"> • Activity • Sustainability 	Network improvements identified in Grantham Walking and Cycling Strategy (Lincolnshire CC) to address deficiencies in relation to strategic cycle/pedestrian routes across	Proposed	Delivery of proposals for new off-road and on-road cycleways and pedestrian only links as identified in the Grantham Walking and Cycling Strategy to encourage increased levels of walking/cycling.	7, 8, 9, 10, 14, 15, 16

Project Ref/ Name	GI Functions	Need	Status	Project Description	Ward
		Grantham.			
A4. Town Gateways	<ul style="list-style-type: none"> • Sense of Place • Biodiversity 	To promote Grantham as an attractive place to work, live and visit, and enhance sense of place and identity.	Proposed	Environmental improvements to the public realm at key gateways to the town the North (A607), the South (B1174), the East (A52) and the West (A607), plus the Station Approach.	4, 11, 14, 15, 16,
Grantham Urban Green Grid Projects (cont...)					
A5. Greater Wyndham Park (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place • Hydrology • Climate Control 	To provide accessible natural green space for new and existing communities in accordance with national and local standards, by helping address an identified gap in open space provision for the town.	Proposed	Creation of a single large accessible green space in the heart of Grantham by combining Wyndham Park with Sedgwick Meadows managed to offer enhanced opportunities for engaging communities in healthy activities (e.g. green gyms/health walks), access to nature on people's doorsteps, and contribute to enhancing the town's image/profile.	16
A6. Harrowby Road Cemetery (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity 	To help meet BAP targets and provide access to nature benefits for the local community.	Proposed	Biodiversity improvements to Harrowby Road Cemetery through enhanced wildlife management and appropriate maintenance.	16
A7. Pocket Parks	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place • Climate Control 	To provide accessible natural green space for new and existing communities in accordance with national and local standards, by helping address identified gaps in open space provision for the town.	Proposed	Low key environmental improvements to informal open spaces, where appropriate, to create 'pocket parks' for local communities as informal spaces for relaxation, meeting friends, taking lunch breaks, reading a book or as play areas for children.	All wards
A8. Green Flag Awards	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place • Climate Control 	To ensure that the town's parks, gardens and recreation grounds are managed/designed in accordance with national quality standards.	Proposed	Green Flag Award applications for all of Grantham's existing parks, gardens and recreation grounds (and new green spaces as appropriate), including preparation of management and maintenance plans/activity plans to support applications.	7, 8 ,9, 10, 14, 15, 16,
A9. Greening the Built Environment	<ul style="list-style-type: none"> • Biodiversity • Sense of Place • Sustainability • Climate Control 	To contribute towards climate change mitigation and adaptation objectives for the town.	Proposed	Promotional campaign to encourage retrofitting of green infrastructure into the established built environment through incorporation of green roofs and green walls into buildings, long term maintenance of street trees, provision of sustainable urban drainage systems and	All wards

Project Ref/ Name	GI Functions	Need	Status	Project Description	Ward
				temporary use of vacant plots as green spaces for growing food, relaxation/recreation and play.	
North West Quadrant Green Grid Projects					
B1. NW Sustainable Urban Extension Green Grid (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place • Sustainability • Local Produce • Hydrology • Climate Control 	Needs and opportunities for embedding green infrastructure into the development and linking to the wider network of green spaces are identified in the Sensitivity Analysis of the Growth Area (see Section 3.0).	Proposed	Range of green infrastructure enhancement and creation projects to deliver Green Grid components to be defined by the Sustainable Urban Extension site masterplanning process in accordance with the Development Guidelines in Section 7.0.	5, 6 7
Southern Quadrant Green Grid Projects					
C1. Southern Grantham Community Park (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place • Sustainability • Local Produce • Hydrology • Climate Control 	To provide accessible natural green space for new and existing communities in accordance with national and local standards, by helping address identified gaps in open space provision for the town.	Proposed	Provision of a community park for the Southern Quadrant based on the River Witham to provide a new accessible natural green space corridor, access to nature, access links into the town and biodiversity enhancement benefits. The park would also strengthen landscape structure and contribute to reducing urban heat island effects.	11, 15, 16
C2. Southern Sustainable Urban Extension Green Grid (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place • Sustainability • Local Produce • Hydrology • Climate Control 	Needs and opportunities for embedding green infrastructure into the development and linking to the wider network of green spaces are identified in the Sensitivity Analysis of the Growth Area (see Section 3.0).	Proposed	Range of green infrastructure enhancement and creation projects to deliver Green Grid components to be defined by the Sustainable Urban Extension site masterplanning process in accordance with the Development Guidelines in Section 7.0.	11, 15 16
Green Corridor Projects					
D1. Witham Riverpark (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place 	Need for a strategic and long term approach to management of the River Witham corridor as a key green	Proposed	Development of a detailed strategy and action plan to provide a strategic framework for the long-term management and maintenance of the	4, 8, 9, 10, 11, 13, 16

Project Ref/ Name	GI Functions	Need	Status	Project Description	Ward
	<ul style="list-style-type: none"> • Sustainability • Hydrology 	infrastructure asset for the town.		Witham Corridor as a 'Riverpark', to be informed by appraisal of green infrastructure opportunities and constraints in Appendix B. The aims of the Strategy to include improving connectivity along the River Corridor; enhancing the quality of focal points (historic, natural and leisure assets); developing a corridor-wide approach to biodiversity enhancement; and promoting the River as a visitor destination.	
E1. Grantham Canal Basin (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place • Sustainability • Climate Control 	The Grantham Canal Partnership has identified the importance of the Canal in providing access, recreation and biodiversity benefits for Grantham.	Proposed	Green infrastructure improvements as integral part of the redevelopment of the former Canal Basin site involving phased establishment of Canal link north of Earlesfield Lane initially as a linear green space, then creation of a new off-road cycleway/footpath (Greenway link) and ultimately reinstatement of the Canal structure/water. Together with enhancement of the Mow Beck corridor, this project forms basis of new space and public realm network for the site. To be informed by appraisal of opportunities and constraints in Appendix C.	14, 15
E2. Grantham Canal Corridor (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place 	The Grantham Canal Partnership has identified the importance of the Canal in providing access, recreation and biodiversity benefits for Grantham.	Proposed	Strengthening the multi-functionality of the Canal corridor west of the A1 through appropriate interventions. This could include: creating a mosaic of habitats either side of the Canal, and providing opportunities to enhance access to nature and the landscape setting of the Canal (to be informed by appraisal of green infrastructure opportunities and constraints in Appendix C); restoring historic locks and interpretation of the industrial heritage; and considering opportunities for appropriate development that can help create and strengthen the multi-functional role of the Canal	6, 13, 14, 15,

Project Ref/ Name	GI Functions	Need	Status	Project Description	Ward
				(such as appropriate leisure/recreational development and/or waterway related employment development).	
Green Loop Projects					
F1. NW Grantham Urban Fringe Community Parklands (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place • Sustainability • Local Produce • Climate Control 	To provide accessible natural green space for new and existing communities in accordance with national and local standards, by helping address identified gaps in open space provision for the town.	Proposed	Provision of accessible natural green spaces in the countryside close to existing and future communities, comprising a series of sites that offer a variety of natural features and habitats with space for outdoor recreation and play facilities. Parks to be developed as community green spaces to encourage local people to get involved in their creation/maintenance, and identify how the spaces should be used for local benefits (e.g. growing food, recreation, community performances, etc).	5, 6, 8,
F2. East Grantham Urban Fringe Community Parklands (see Figure 6.1)	<ul style="list-style-type: none"> • As above. 	As above.	As above.	As above.	10, 11, 16
F3. Belton Park Management (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place 	To ensure a long-term management framework is in place for Belton Park that reflects its role in providing accessible natural green space for the town in accordance with national and local standards.	Proposed	Preparation of management plan to provide an up-to-date and detailed framework for guiding the future protection, conservation and enjoyment of the Park's special historical and natural environmental qualities, including sustainable access for the local community and visitors.	4, 11
F4. Woodland Network	<ul style="list-style-type: none"> • Biodiversity • Sense of Place 	Safeguard and enhance biodiversity to reduce fragmentation and increase potential for species dispersal.	Proposed	Enhance the woodland resource to the south and east of Grantham through enhanced management of existing woodlands and new woodland creation.	4, 11, 12, 13, 1718,
F5. Limestone Grasslands Network	<ul style="list-style-type: none"> • Biodiversity • Sense of Place 	Safeguard and enhance biodiversity to reduce fragmentation and increase potential for species dispersal.	Existing	Continue the work of the current 'Life on the Verge' project (which ends in 2011) to enhance and extend networks of limestone grassland in	Parts of relevant rural wards

Project Ref/ Name	GI Functions	Need	Status	Project Description	Ward
				the area.	
Green Link Projects					
G1. River Witham (North) Greenway (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sense of Place • Sustainability 	To improve connectivity between communities in Grantham and the countryside north of the town, including Belton Park, in order to meet the aims of the Grantham Movement Strategy.	Proposed	Creation of a new (c.2.5km) Greenway (multi-user off-road pedestrian/cycle leisure and commuting route) alongside the River Witham/Queen Elizabeth Park connecting the town centre and Belton/Belton Park, with possible extension to Barkston.	4, 9, 10, 11, 16,
H1. Loundthorpe Greenway (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sustainability 	To improve connectivity between communities in north-east of Grantham and the countryside to the north-east of the town, in order to meet the aims of the Grantham Movement Strategy.	Proposed	Creation of a new (c.2.5km) Greenway (multi-user off-road pedestrian/cycle leisure and commuting route) connecting the proposed River Witham (North) Greenway to via the Harrowby neighbourhood to Loundthorpe village, to provide part of the proposed Sustrans National Cycle Network route 15.	10, 11
I1. Turnor Road to Ropsley Rise Wood Gap (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Sustainability 	Need to address a gap in the Green Link network.	Proposed	Create a new footpath link between the B6403 and the A52.	111, 12, 16
J1. River Witham (South) Greenway (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sustainability 	To improve connectivity between communities in Grantham, the new community in the Southern Quadrant Growth Area and rural communities south of Grantham, in order to meet the aims of the Grantham Movement Strategy.	Proposed	Creation of a new (c.2.5km) Greenway (multi-user off-road pedestrian/cycle leisure and commuting route) alongside the River Witham connecting the town centre, the Sustainable Urban Extension and the village of Little Ponton, with possible extension to Great Ponton.	11, 13, 16
K1. Grantham Canal Greenway Gap (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Sustainability 	Need to address gap in Greenway east of A1 to enhance connectivity between town centre and existing Greenway west of A1, in order to meet the aims of the Grantham Movement Strategy.	Proposed	Phased creation of new Greenway (multi-user off-road pedestrian/cycle leisure and commuting route) link initially between A1 and Earlsfield Lane, and then between Earlsfield Lane and Old Wharf Road (to be delivered as part of Project E1).	8, 9, 13, 14, 15,
L1. Barrowby Greenway (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sustainability 	To improve connectivity between communities in Grantham, the new community in the North West	Proposed	Creation of a new (c.2.5km) Greenway (multi-user off-road pedestrian/cycle leisure and commuting route) connecting the town centre,	5, 6, 7, 8, 9,

Project Ref/ Name	GI Functions	Need	Status	Project Description	Ward
		Quadrant Growth Area and rural communities west and north-west of Grantham, in order to meet the aims of the Grantham Movement Strategy.		the Sustainable Urban Extension and the village of Barrowby, with possible extension to Sedgebrook and Allington.	
Green Link Projects (cont...)					
M1. Great Gonerby Greenway (see Figure 6.1)	<ul style="list-style-type: none"> • Activity • Biodiversity • Sustainability 	To improve connectivity between communities in Grantham, the new community in the North West Quadrant Growth Area and the village of Great Gonerby, in order to meet the aims of the Grantham Movement Strategy.	Proposed	Creation of a new (c.2.5km) Greenway (multi-user off-road pedestrian/cycle leisure and commuting route) connecting the proposed Barrowby Greenway, the Sustainable Urban Extension and the village of Great Gonerby, with possible extension to Belton.	5, 7, 8,
N1. Green Link Improvements	<ul style="list-style-type: none"> • Activity • Sustainability 	The Lincolnshire Rights of Way Improvement Plan 2007-2012 identifies needs for the Rights of Way network around Grantham to be improved.	Proposed	Development of Action Plan for targeted access improvements to existing access links in line with Rights of Way Improvement Plan. Improvements to include as appropriate: providing clearer signage/ waymarking, new seating and interpretation; improving the maintenance of routes; removing stiles and other barriers along public rights of way where they are no longer needed; enhancing the surfacing of paths and trails; improving crossing points on main roads for vulnerable users; regular vegetation clearance; tackling drainage issues for low-lying paths; and improving street lighting along access routes in urban areas.	All wards

6.7 Project Delivery Action Plan

6.7.1 **Table 6.2** sets out an Outline Action Plan to guide delivery of the green infrastructure projects identified in **Section 6.4**. Table 6.2 contains the following information:

- **Project Ref:** unique reference number for the project (see **Figure 6.1** for location of green space and links projects).
- **Green Infrastructure Project:** name of the project as described in **Table 6.1**.
- **Lead Delivery Partner:** suggested potential lead partner with prime responsibilities for green infrastructure project delivery.
- **Supporting Delivery Partners:** suggested potential delivery partner(s) with responsibilities for supporting green infrastructure delivery by the lead partner.

Partner abbreviations:

- BW - British Waterways
 - CLBA - Country Land and Business Association
 - EA - Environment Agency
 - EH - English Heritage
 - FWP - Friends of Wyndham Park
 - GCP - Grantham Canal Partnership
 - GCRS - Grantham Canal Restoration Society
 - GCS - Grantham Civic Society
 - GRCG - Grantham River Care Group
 - LCC - Lincolnshire County Council
 - LGT - Lincolnshire Gardens Trust
 - LWT - Lincolnshire Wildlife Trust
 - NE - Natural England
 - NT - National Trust
 - PC - Parish Council
 - SKDC - South Kesteven District Council
 - TC - Town Council
 - WPF - Wyndham Park Forum
- **Priority Action(s):** recommended critical path activity required to take forward project delivery. These are identified as: **Feasibility Study** (to provide detailed examination of options to identify preferred site, route or programme, and/or consider land ownership/availability/acquisition requirements, and/or provide detailed costings for capital works and long-term maintenance, and/or identify potential sources of funding); **Design Development** (to provide designs for the green space or link, and secure funding and any necessary statutory consents/approvals); or **Project Implementation** (to indicate on the ground delivery of the project).
 - **Indicative Capital/Revenue Costs:** estimate of indicative costs for delivery of priority actions, using cost bandings as follows:
 - * Low: <£50K
 - * Medium: £50k-£150K
 - * Medium-High: £150k-£500K
 - * High: £500k-£1M
 - * Major: >£1M
 - * tbc: Cost to be determined by Feasibility Study
 - **Potential Funding Source(s):** indicative sources of funding for project delivery based on the options identified in **Section 6.3**.

Potential funding sources abbreviations:

- BLF – Big Lottery Fund

- GPF – Growth Point Fund
- HLF – Heritage Lottery Fund
- LCC – Lincolnshire County Council
- LT Communities Fund – Landfill Tax Communities Fund
- PCT – Primary Care Trust
- SKDC – South Kesteven District Council
- **Delivery Time-Scale:** suggested targets for delivery of priority actions identified as follows:
 - * Short Term: 2011-2013
 - * Medium Term: 2014-2018
 - * Long Term: 2019-2026

Table 6.2 – Outline Action Plan

Project Ref	GI Project	Lead Delivery Partner	Supporting Delivery Partners	Priority Action(s)	Indicative Capital Costs	Indicative Revenue Costs	Potential Funding Source(s)	Delivery Time-Scale
Grantham Urban Green Grid Projects								
A1	Heritage and Environmental Trail	SKDC	EH, FWP, GCS, LCC, TC, WPF	Feasibility Study Design Development	Medium	tbc	GPF/HLF/LCC	Short/Medium
A2	The Green Mile	LCC	SKDC, TC	Feasibility Study Design Development	Low	tbc	GPF/LCC/ Developer Contributions	Short/Medium
A3	Grantham Walking and Cycling Network	LCC	PC, SKDC, TC	Feasibility Studies Design Development	Medium	tbc	LCC/Developer Contributions	Short-Medium
A4	Town Gateways	SKDC/LCC	PC, TC	Feasibility Study Design Development	Low	tbc	LCC/Private Sector Sponsorship	Short-Medium
A5	Greater Wyndham Park	SKDC	FWP, GCS, LWT, PC, TC, WPF	Feasibility Study	Low	tbc	Landowner/GPF/ Private Sector Sponsorship/BLF	Short-Medium
A6	Harrowby Road Cemetery	PC	SKDC, LWT	Feasibility Study	Low	tbc	BLF	Short-Medium
A7	Pocket Parks	PCs, TC	SKDC	Design Development Project Implementation	Medium-High	tbc	LT Communities Fund/BLF/ Private Sector Sponsorship/ Developer Contributions	Ongoing
A8	Green Flag Awards	SKDC	EH, FWP, GCS, LGT, PC, TC, WPF	Project Implementation	Medium	Low	SKDC/Private Sector Sponsorship	Ongoing
A9	Greening the Built Environment	SKDC	EA, EH, GCS, LWT, NE, PC, TC	Project Implementation	Low	Low	Private Sector Sponsorship/GPF	Ongoing

Project Ref	GI Project	Lead Delivery Partner	Supporting Delivery Partners	Priority Action(s)	Indicative Capital Costs	Indicative Revenue Costs	Potential Funding Source(s)	Delivery Time-Scale
North West Quadrant Green Grid Projects								
B1	NW Sustainable Urban Extension Green Grid	SKDC, Developers	EA, LWT, NE, PC	Design Development Project Implementation	Major	Major	Developer Contributions	Short/Medium
Southern Quadrant Green Grid Projects								
C1	Southern Grantham Community Park	SKDC	Developers, EA, GRCC, LWT, NE, PC	Feasibility Study Design Development	Medium	tbc	Developer Contributions/ GPF	Medium
C2	Southern Sustainable Urban Extension Green Grid	SKDC, Developers	EA, LWT, NE, PC	Design Development Project Implementation	Major	Major	Developer Contributions	Short/Medium
Green Corridor Projects								
D1	Witham Riverpark	SKDC	EA, EH, FWP, GCS, GRCC, LCC, LWT, NE, NT, PC, TC, WPF	Feasibility Study	Medium	tbc	GPF/HLF	Short/Medium
E1	Grantham Canal Basin	SKDC, Developers	BW, EA, EH, GCP, GCRS, GCS, GRCC, LWT, NE, PC, TC	Project Implementation	High	Medium-High	Developer Contributions/ GPF	Medium/Long
E2	Grantham Canal Corridor	GCP	BW, CLBA, EA, EH, GCRS, LCC, LWT, NE, PC	Feasibility Study Design Development	Medium	tbc	HLF/BLF/ Developer Contributions/ Higher Level Stewardship	Medium/Long

Project Ref	GI Project	Lead Delivery Partner	Supporting Delivery Partners	Priority Action(s)	Indicative Capital Costs	Indicative Revenue Costs	Potential Funding Source(s)	Delivery Time-Scale
Green Loop Projects								
F1	NW Grantham Urban Fringe Community Parklands	SKDC	Developers, CLBA, LCC, LWT, NE, PC	Feasibility Study Design Development	Low	tbc	Developer Contributions/LT Communities Fund/BLF/Private Sector Sponsorship/PCT	Short/Medium
F2	East Grantham Urban Fringe Community Parklands	SKDC	CLBA, LCC, LWT, NE, PC	Feasibility Study Design Development	Low	tbc	Developer Contributions/LT Communities Fund/BLF/Private Sector Sponsorship/PCT	Short/Medium
F3	Belton Park Management	NT	EH, NE	Project Implementation	Low	N/A	Landowner/HLF/Higher Level Stewardship	Medium/Long
F4	Woodland Network	LWT	CLBA, LCC, NE, PC, SKDC	Feasibility Study	Low	tbc	Woodland Grant Scheme/Higher Level Stewardship	Short/Medium
F5	Limestone Grasslands Network	LWT	CLBA, LCC, NE, PC, SKDC	Feasibility Study	Low	tbc	Higher Level Stewardship	Short/Medium
Green Link Projects								
G1	River Witham (North) Greenway	LCC	EA, NT, PC, SKDC, TC	Feasibility Study Design Development	Low	tbc	LCC/GPF	Short/Medium
H1	Londonthorpe Greenway	LCC	PC, SKDC	Feasibility Study Design Development	Low	tbc	LCC/GPF	Short/Medium
I1	Turnor Road to Ropsley Rise Wood Gap	LCC	PC	Feasibility Study Design Development	Low	tbc	LCC/GPF	Medium
J1	River Witham (South) Greenway	LCC	Developers, EA, PC, SKDC	Feasibility Study Design Development	Low	tbc	LCC/GPF/ Developer Contributions	Short/Medium

Project Ref	GI Project	Lead Delivery Partner	Supporting Delivery Partners	Priority Action(s)	Indicative Capital Costs	Indicative Revenue Costs	Potential Funding Source(s)	Delivery Time-Scale
K1	Grantham Canal Greenway Gap	LCC	GCP, PC, SKDC	Feasibility Study Design Development	Low	tbc	LCC/GPF	Short/Medium
L1	Barrowby Greenway	LCC	PC, SKDC	Feasibility Study Design Development	Low	tbc	LCC/GPF/ Developer Contributions	Short/Medium
M1	Great Gonerby Greenway	LCC	PC, SKDC	Feasibility Study Design Development	Low	tbc	LCC/GPF/ Developer Contributions	Short/Medium
N1	Green Link Improvements	LCC	PC, SKDC	Project Implementation	High	High	LCC/GPF	Ongoing

7.0 DEVELOPMENT GUIDELINES

7.1 General

7.1.1 This final section of the Green Infrastructure Strategy provides guidelines for embedding green infrastructure into new development schemes, including standards for the quantity, quality and accessibility of green space provision. These guidelines are intended to be of value for developers, residents and planners in helping inform pre-application discussions and consultations, evaluation of planning applications and implementation of developments.

7.2 Planning Principles

7.2.1 The planning and development management process affords considerable potential to promote and deliver green infrastructure. The planning principles outlined below are intended to inform the provision of green infrastructure through the statutory planning process:

Green Infrastructure Planning Principles

- 1. GI should be embedded into the layout of new development alongside the design of the built environment and grey infrastructure from the start of the masterplanning process.**
- 2. Development should retain, enhance and/or create green corridors that contribute to the GI Network and support connectivity with the town centre, urban fringe areas and the wider countryside.**
- 3. Development that will cause significant harm to the functioning of the GI Network, particularly in relation to reducing the impacts of and adapting to climate change, should be discouraged.**
- 4. Where an adverse impact on green infrastructure is unavoidable, development should provide suitable mitigation measures to ensure the overall multi-functionality and connectivity of the GI Network is maintained.**
- 5. Development should provide or contribute towards the provision of on- or off-site GI as appropriate in locations with identified deficiencies, including arrangements for on-going management and maintenance of green spaces.**
- 6. The amount and quality of GI of different types that is required by a development to ensure residents have the opportunity to interact with nature, and encourage recreation, sports and healthier lifestyles, should reflect Natural England's standards for accessible natural greenspace and the standards for open space provision recommended in the South Kesteven Open Space, Sports and Recreation Study.**
- 7. Development should deliver a net increase in biodiversity by incorporating opportunities to enhance biodiversity and improve ecological connectivity, including contributing to local Biodiversity Action Plan targets.**

8. Development should incorporate measures for adapting to and mitigating against the effects of climate change through innovative GI design solutions, including sustainable water management/drainage systems and urban cooling measures.
9. Development involving the re-use, adaptation or conversion of existing buildings within established built environments should include opportunities for retrofitting GI measures into proposals, such as green roofs and green walls for example.

7.3 Green Infrastructure Standards

7.3.1 Providing a connected and multi-functional network of high quality green spaces that delivers long-term benefits for people and nature is a key aim of the Grantham Green Infrastructure Strategy. This can best be achieved through adoption of the following standards related to the quantity, quality and accessibility of green space provision.

7.3.2 **Accessible natural greenspace standards** are recommended by Natural England to ensure residents have the opportunity to interact with nature, and encourage recreation, sports and healthier lifestyles. These include the following standards for the quantity, quality and accessibility of greenspace provision:

- **Accessibility and Quantity Standard** – the Access to Natural Greenspace Standard (ANGSt) seeks to improve green space access, naturalness and connectivity by encouraging provision of range of site types and sizes within walking distance and sustainable transport distances of people’s homes¹⁰⁸;
- **Service Standards** – national standards for delivery of core services/facilities for specific green space types (e.g. Country Park Accreditation); and
- **Quality Standard** – The Green Flag Award scheme provides a national quality standard for management of existing green spaces.

7.3.3 Full details of the above standards can be found in Natural England’s ‘Nature Nearby’ Accessible Natural Greenspace Guidance (2010).

7.3.4 The **South Kesteven Open Space, Sport and Recreation Study** (2009) recommends local quantitative, qualitative and accessibility standards for different types of open spaces in and around Grantham derived from assessments of needs and opportunities within the district. Development schemes in the Grantham Area should make provision for open space in accordance with the recommended standards for size criteria and distance catchments set out in the Study.

¹⁰⁸ The Woodland Trust’s Woodland Access Standard is a complementary accessibility standard to ANGSt endorsed by Natural England (see www.woodlandtrust.org.uk for details).

- 7.3.5 The green infrastructure standards in the Town and Country Planning Association's **Eco Towns Worksheet** are also recommended for informing major developments where appropriate. Eco-towns are intended to be exemplars of good practice in new development, meeting the highest standards in terms of sustainable development and minimising carbon footprints, social justice and inclusive communities. The Eco-Town Worksheet provides planning guidance on the range of subject areas to be addressed and the standards to be met when planning an 'eco-town'.
- 7.3.6 Raising the standard of building and landscape design quality is also a priority for the Green Infrastructure Strategy. Good green infrastructure design should work with existing features (e.g. retaining hedgerows to define a greenway network or using existing drainage ditches as part of a sustainable urban drainage system), and be appropriate to the desired primary and secondary functions for green infrastructure in the locality (e.g. balancing biodiversity and access, landscape character and flood risk management, etc).
- 7.3.7 CABE's **Building for Life standards**¹⁰⁹, developed in conjunction with the House Builders Federation, promote the incorporation of green infrastructure into housing developments through measures such as: sustainable building materials; renewable energy; green design principles (green roofs, grey water recycling, energy efficiency); and sustainable urban drainage systems.
- 7.3.8 Other sources of useful advice and good practice for green infrastructure design at the site masterplan scale can be found in **Natural England's Green Infrastructure Guidance** and the Town and Country Planning Association's **Biodiversity by Design** guide.
- 7.3.9 Developers should also be encouraged to consider applying to accreditation schemes, such as The Wildlife Trust's **Biodiversity Benchmark**, to gain recognition of the quality of their work.
- 7.3.10 The MKSM Green Infrastructure Design Guide for planners and developers '**Green infrastructure by design: adding value to developments**' published in April 2010 sets out design principles for masterplanning of new developments, such as urban extensions, based around the seven key functions for green infrastructure identified in Natural England's Green Infrastructure Guidance (2009)¹¹⁰. The Green Infrastructure Design Guide provides a valuable checklist for use by developers to help raise the quality of design and development in growth locations, and also help local authority planners evaluate planning applications to ensure high standards in green infrastructure design are achieved. Natural England and the Environment

¹⁰⁹ <http://www.buildingforlife.org>.

¹¹⁰ <http://naturalengland.etraderstores.com/NaturalEnglandShop/Product.aspx?ProductID=cda68051-1381-452f-8e5b-8d7297783bbd>

Agency promote the award-winning MKSM Green Infrastructure Design Guide as a model for other growth locations, as the design principles are universally applicable.

7.4 Design Guidelines for the Growth Areas

7.4.1 The provision of green infrastructure for the Growth Areas should be delivered in accordance with the principles set out in **Section 7.2** above. Developers should fully consider opportunities for adding value to the developments by incorporating high quality, sustainable and multi-functional green infrastructure within their schemes at an early stage in the place making process, including how it will contribute to, and connect with, the wider Green Infrastructure Network beyond the development site as set out in **Section 4.0**.

7.4.2 To assist in this, general design guidelines have been devised to provide a checklist for masterplanning of Sustainable Urban Extensions within the Growth Areas. These should be read and used in conjunction with the sensitivity analysis of the respective Growth Area set out in **Section 3.0**.

Landscape setting and context for development

7.4.3 To support this function, the masterplanning and design of green infrastructure for the Sustainable Urban Extensions should, where appropriate, consider opportunities to:

- Incorporate a structural network of linked natural green spaces into development to contribute to and enhance the landscape setting of Grantham, and help integrate townscape and landscape elements.
- Plan for and implement new structural landscape planting of native tree species appropriate to local character at the earliest possible stage, to ensure that development is visually well integrated into its landscape context and is appropriate to Grantham's local sense of place.
- Design of structural landscaping elements around residential development areas should create a soft edge linking landscape and townscape elements, with use of continuous bands of thicker screen planting to integrate new employment development areas into the landscape as experienced from within the new community, the town and from the surrounding countryside.
- Encourage use of more natural forms of architectural building design and materials to provide landscape and visual mitigation benefits and contribute to sense of place – e.g. green roofs, green walls, timber construction for walls and claddings.
- Use existing landscape structural features to enhance local landscape character and provide mitigation for environmental impacts – e.g. retain and extend woodlands as landscape buffers to visually screen roads (such as the A1/A52), mitigate traffic noise and improve air quality, and integrate flood attenuation areas for the development into the design of the structural landscape buffers.

- Conserve and enhance existing structural features such as woodland blocks and hedgerows within the site to contribute to a strong landscape edge and setting for developed areas, retaining and managing these for recreational and biodiversity value as part of new green accessible spaces.
- Extend structural landscape screening using shelterbelts with appropriate native species in more open parts of the site, to filter views of development from elevated areas.
- Avoid or limit lighting as far as possible around the edges of the development area to conserve dark night skies and minimise sky glow in the rural area beyond Grantham.
- Create positive approaches to the new communities, and to the existing urban area, through avenue planting of semi mature native street trees on key gateway routes, and ensure that existing street trees are managed and enhanced to ensure that they are sustained as enduring features of the landscape and townscape.

Access, recreation, movement and leisure

7.4.4 To support this function, the masterplanning and design of green infrastructure for the Sustainable Urban Extensions should, where appropriate, consider opportunities to:

- Conserve and enhance existing tracks and field boundaries as green links to provide new footpath and cycle links to connect the development site to its different zones/neighbourhoods, and to link into the wider rights of way and green space network.
- Consider opportunities to create new crossings over/under major transport corridors to provide enhanced pedestrian and ecological connectivity between Grantham and the wider countryside.
- Provide opportunities to use green spaces and other green infrastructure assets as an outdoor classroom by providing access to and interpretation of natural and cultural assets.
- Design community parks to provide a balance between formal and passive recreation and access to nature, and offer varied opportunities for natural play.
- Connect housing and employment areas to wider greenways network to contribute to healthy communities and green travel objectives.
- Provide a hierarchy of access routes, segregated as necessary, for pedestrians, horse riders and cyclists.
- Engage local communities at all stages of the planning and design process to foster a sense of ownership and responsibility for the long-term care of green spaces – e.g. design workshops and involvement in implementation through community planting/open days.
- Design recreational and play spaces to have a distinct sense of place, which provides an enjoyable and visually rewarding environment for all users and responds to and reflects its landscape context.
- Design play spaces to provide opportunities for a wide range of types of play, including active and passive or quieter, creative forms of play.
- Plan and design new development to respect sensitive horizons/skylines and views that provide key elements of Grantham’s visual context and setting, and tie development visually to the historic centre of Grantham by safeguarding key views of and from local landmarks.

- Design green spaces and links to be accessible and inclusive to all ages and community groups, and to accommodate a wide variety of specific requirements including users with mobility impairments.

Habitat provision and access to nature

7.4.5 To support this function, the masterplanning and design of green infrastructure for the Sustainable Urban Extensions should, where appropriate, consider opportunities to:

- Retain and enhance existing habitat corridors and provide ecological buffers through grassland, scrub, trees and woodland habitat creation.
- Create a network of habitat links throughout the development, for example using the existing hedgerow network, and enhancing and extending through habitat creation, including grassland, scrub and trees in adjoining areas.
- Retain and enhance existing watercourse corridors through incorporation into the site's open space network, and consider opportunities for naturalisation/diversification of habitats, such as wetland, grassland, scrub and trees.
- Conserve, strengthen and enhance veteran trees and the existing native hedgerow network, and enhance and extend existing woodland, to safeguard biodiversity assets and maintain the landscape structure of the site.
- Encourage use of ecological building design measures that enhance biodiversity – e.g. green roofs, green walls, and tree planting/habitat creation within green spaces, and nesting and roosting spaces for birds/bats.

Energy production and conservation

7.4.6 To support this function, the masterplanning and design of green infrastructure for the Sustainable Urban Extensions should, where appropriate, consider opportunities to:

- Consider options for incorporating measures for local renewable energy production into management of green spaces – e.g. energy crops, Combined Heat & Power plant based on local woodland coppice management, micro hydro-electric schemes and wind turbines.
- Specify locally sourced and sustainably manufactured/produced materials and finishes wherever possible in the design, implementation and future management of green space to assist in reducing the carbon footprint of delivering green infrastructure.

Food production and productive landscapes

7.4.7 To support this function, the masterplanning and design of green infrastructure for the Sustainable Urban Extensions should, where appropriate, consider opportunities to:

- Encourage local food production by using green spaces for allotments and community gardens/orchards.

- Encourage local food production by creating links with adjacent farms providing small-scale local food production, local produce sales and educational opportunities for children.
- Encourage local food production by using green spaces to provide location for open air market selling local produce.

Flood attenuation and water resource management

7.4.8 To support this function, the masterplanning and design of green infrastructure for the Sustainable Urban Extensions should, where appropriate, consider opportunities to:

- Safeguard water quality from potential risks of negative impacts associated with drainage from development.
- Incorporate Sustainable Drainage Systems (SuDS) throughout the development layout to assist in delivering flood storage and water balancing functions.
- Work with site topography/natural drainage patterns and existing landscape features to ensure that SuDS design maximises opportunities for delivering biodiversity gains and enhancing landscape character – e.g. wetland habitat creation by using appropriate native wetland and marginal/aquatic planting as part of design of swales to catch surface water run-off and ponds for water balancing/attenuation, and creating variety and interest in amenity/public open space areas.

Countering the ‘heat island’ effect of urban areas

7.4.9 To support this function, the masterplanning and design of green infrastructure for the Sustainable Urban Extensions should, where appropriate, consider opportunities to:

- Encourage use of green building design measures that help reduce energy and water consumption and provide natural shading/cooling to counter the heat island effect of urban areas.
- Incorporate green building design measures such as green roofs, green walls, timber construction for walls and claddings, water saving devices (e.g. rainwater recycling), and retaining/planting trees within landscaping schemes.

